

DIRECTORY OF MODULES OFFERED IN ENGLISH LANGUAGE

COURSES OFFERED IN ENGLISH AT THE UNIVERSITY OF GÖTTINGEN
ACADEMIC YEAR 2026/2027

GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN IN PUBLICA COMMODA SEIT 1737

A very warm welcome!

The University of Göttingen features an outstanding study environment for both exchange and full-degree students. All courses of study benefit from an excellent research-oriented environment formed by a broad network including four Max Planck Institutes, the German Primate Centre, the German Aerospace Centre and the Academy of Science and Humanities: the Göttingen Campus. An increasing number of lectures and courses are taught in the English language attracting more and more international students. This catalogue provides an impression of what is available.

This catalogue of courses taught in English varies from faculty to faculty and the courses available to you depend on whether you are an exchange student coming to Göttingen for a semester or an academic year, or whether you are a full degree student coming to Göttingen to complete an entire degree programme. You may take most courses in the programme you are enrolled in, however in a few cases restrictions may apply. Selecting courses from other subjects or other departments might require negotiations. If you have any questions, please contact the study advisor in charge of your subject.

Prior to their arrival in Göttingen exchange students have to set up a learning agreement. In some cases restrictions will apply, e.g. signing up for certain laboratory courses may not be possible. Generally exchange students are required to take at least half of the lectures and courses within their chosen subject.

Full degree students must first apply for a study place. Links to websites with application guidelines and deadlines are provided by some subjects/faculties. If not stated otherwise please visit:

http://www.uni-goettingen.de/en/3811.html

In any case, you are very welcome to browse through this catalogue to find/check out courses that suit your interests! For the complete course catalogue of the University of Göttingen see:

https://ecampus.uni-goettingen.de

We look forward to welcoming you in Göttingen!

Georg-August-Universität
Göttingen

Directory of Modules

Index by areas of study

I. Faculty of Agricultural Sciences

The Faculty of Agricultural Sciences offers two full master programs in English language:

- **Sustainable International Agriculture** : *http://www.uni-goettingen.de/en/96913.html*
- **Crop Protection** : *http://www.uni-goettingen.de/de/135654.html*

Since the Faculty offers almost no Bachelor courses in English language, the exchange students are invited to take part in the master courses independent of their level at the home university.

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M.SIA.E34: Economic Valuation of Ecosystem Services (6 C, 4 SWS) 965
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II. Faculty of Biology and Psychology

1. Biology

a. Bachelor programmes

The courses/modules available varies depending whether you are degree or exchange student.

All B.Sc. programmes are taught in German.

aa. Degree students

German knowledge of level DSH2 is required.

Information and contact details about the different study programmes can be found here:

http://www.uni-goettingen.de/de/bachelor--2-fach-bachelor-biologie/122050.html

bb. Exchange students

German knowledge of level B2 is recommended.

Information and contact details about application procedure and courses available for exchange bachelor students can be found here:

http://biologie.uni-goettingen.de/incoming_en

For courses in German language German knowledge of CEFR level B2 is recommended.

Course admission restrictions may occur depending on your previous knowledge in biology and other natural sciences.

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SK.Bio.7001: Neurobiology (6 C, 4 SWS)..... 1235

SK.Bio.7002: Basic virology (3 C, 2 SWS)..... 1237

SK.Bio.7004: Environmental microbiology (3 C, 2 SWS)..... 1238

SK.Bio.7007: Methods in molecular virology (3 C, 2 SWS)..... 1239

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b. Master programmes

The courses/modules available varies depending whether you are degree or exchange student.

All M.Sc. programmes are taught in English.

aa. Degree students

Proof of proficiency in English (level C1 according to *Common European Framework* of Reference for Languages, CEFR) and German (CEFR level B1) is mandatory at the time point of application.

i. M.Sc. Microbiology and Biochemistry

Information and contact details about application procedure and study programme details can be found here:

http://www.uni-goettingen.de/en/35341.html

ii. M.Sc. Development, Neural and Behavioral Biology

Information and contact details about application procedure and study programme details can be found here:

http://www.uni-goettingen.de/en/38560.html

iii. M.Sc. Biodiversity, Ecology and Evolution

Information and contact details about application procedure and study programme details can be found here:

http://www.uni-goettingen.de/en/123968.html

bb. Exchange students

You can participate in the courses listed below from the different master programmes, however it requires

- previous knowledge in the field of study and
- a language proof (CEFR level C1) at the time point of application.

Information and contact details about application procedure and courses available for exchange master students can be found here:

http://biologie.uni-goettingen.de/incoming_en

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M.Bio.360: Development and plasticity of the nervous system (seminar) (3 C, 2 SWS)..... 425
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2. Psychology

No courses available, as all study programmes in Psychology are taught in German.

III. Faculty of Chemistry

In our Master´s programme we offer a various range of lectures in English. Please, feel free to contact us at the Dean´s office (*dekanat@chemie.uni-goettingen.de*). We are pleased to inform you about the lectures held in English in the semester you wish to come to Göttingen.

It is always possible to participate in the practical courses in our research groups (Modules *M.Che.1116, M.Che.1117, M.Che.1221, M.Che.1222, M.Che.1321, M.Che.1322*). All group leaders welcome English speaking guest students, though formally the modules are offered in German.

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M.Che.1315: Chemical Dynamics at Surfaces (6 C, 5 SWS)....487

IV. Faculty of Forest Sciences and Forest Ecology

The Faculty of Forest Sciences and Forest Ecology offers two full degree programs in English language.

- **B.Sc. Ecosystem Sciences** : *https://www.uni-goettingen.de/en/657331.html*
- **M.Sc. Forest and Ecosystem Sciences** : *https://www.uni-goettingen.de/en/626646.html*

1. Bachelor: Ecosystem Sciences

Students who are planning to participate in practical, laboratory or computer courses (see course description) have to contact the named coordinator first.

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B.ES.117: Physiological and Genetic Methods (6 C, 4 SWS)....70

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B.ES.701: Resource Assessment in Ecosystems (6 C, 4 SWS)....76

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M.FES.122: Ecological Simulation Modelling (6 C, 4 SWS)....569
M.FES.123: Functional-Structural Plant Models (6 C, 4 SWS)....570
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M.FES.314: Forest Utilization and Wood Processing (6 C, 4 SWS)....584
M.FES.315: Monitoring of Forests and forrested Landscapes (6 C, 4 SWS)....586
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M.FES.324: Environmental Biotechnology and Forest Genetics (6 C, 4 SWS)....593
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VI. Faculty of Mathematics and Computer Science

1. Department of Mathematics

Whether visiting for only a semester, planning a longer stay, or completing one of our degree programmes, the Department of Mathematics offers an excellent international study environment for students from abroad. In what follows we provide a very rough sketch of the structure of our degree programmes. For further details we refer to the respectice websites:

- Master's Degree programme: www.math.uni-goettingen.de/master
- Bachelor's Degree programme: www.math.uni-goettingen.de/bachelor

In the graduate degree programme all mathematics courses (course number M.Mat.****) are taught in English.

In the undergraduate degree programme the structure is as follows.

Course number B.Mat.3***

- recommended for: undergraduate students in semester 5 or higher
- teaching language: English
- Here you will find advanced courses intended to prepare students for independent research into topics of current mathematical interest.

Course number B.Mat.2***

- recommended for: undergraduate students in semester 4 or higher
- teaching language: German
- Here you will find courses such as complex analysis, functional analysis, modern geometry, number theory, numerical analysis, optimisation, stochastics, statistical data science.

Course number B.Mat.1***

- recommended for: undergraduate students in semester 3 or higher
- teaching language: German
- Here you will find courses such as analysis on manifolds, algebra, numerical linear algebra, measure and probability theory

Course number B.Mat.00**

- recommended for: undergraduate students in their first year
- teaching language: German
- Here you will find courses on real analysis and on analytic geometry and linear algebra.
- Note that we do not teach calculus classes. Instead students start with real analysis right from the start of their studies.

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B.Mat.0733: Practical course in scientific computing: Extensions (3 C, 2 SWS)....164

B.Mat.0736: Practical course in scientific computing: Advanced extensions (6 C, 2 SWS)....166

B.Mat.0922: Mathematics information services and electronic publishing (3 C, 2 SWS)....168

B.Mat.0923: Scientific Writing (3 C, 2 SWS)....170

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B.Mat.3011: Functional analysis and spectral theory (6 C, 4 SWS)....174

B.Mat.3012: Introduction to topology (6 C, 4 SWS)....176

B.Mat.3030: Numerical linear algebra for data science (9 C, 6 SWS)....178

B.Mat.3032: Numerics of ordinary differential equations (6 C, 4 SWS)....180
B.Mat.3033: Numerical and applied mathematics (6 C, 4 SWS)....182
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B.Inf.1238: Informetrics (5 C, 4 SWS)....149
B.Inf.1239: Digital Repositories (5 C, 4 SWS)....150
B.Inf.1240: Visualization (6 C, 4 SWS)....151
B.Inf.1241: Computational Optimal Transport (6 C, 4 SWS)....152
B.Inf.1709: Advanced Algorithms and Data Structures (5 C, 4 SWS)....153
B.Inf.1710: Advanced Computer Security and Privacy (5 C, 4 SWS)....156
B.Inf.1711: Advanced Sensor Data Processing (5 C, 4 SWS)....158
B.Inf.1904: Introduction to Computational Linguistics and Natural Language Processing (6 C, 4 SWS)....160

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M.Inf.1115: Advanced Topics on Algorithms (5 C, 4 SWS)....633
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M.Inf.1129: Social Networks and Big Data Methods (5 C, 2 SWS)..... 642
M.Inf.1130: Software-defined Networks (SDN) (5 C, 3 SWS)..... 643
M.Inf.1138: Usable Security and Privacy (5 C, 4 SWS)..... 644
M.Inf.1139: Privacy-Enhancing Technologies (5 C, 4 SWS)..... 645
M.Inf.1150: Advanced Topics in Software Engineering (5 C, 3 SWS)..... 646
M.Inf.1152: Specialisation Softwareengineering: Quality Assurance (5 C, 3 SWS)..... 648
M.Inf.1153: Specialisation Softwareengineering: Requirements Engineering (5 C, 3 SWS)..... 649
M.Inf.1154: Specialisation Softwareengineering: Software Evolution (5 C, 3 SWS)..... 651
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M.Inf.1172: Using Research Infrastructures (5 C, 3 SWS)..... 656
M.Inf.1185: Sensor Data Fusion (5 C, 4 SWS)..... 658
M.Inf.1186: Seminar Hot Topics in Data Fusion and Analytics (5 C, 2 SWS)..... 660
M.Inf.1187: Simulation-based Data Fusion and Analysis (5 C, 4 SWS)..... 661
M.Inf.1191: Privacy in Ubiquitous Computing (5 C, 4 SWS)..... 663
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M.Inf.1193: Seminar on Usable Security and Privacy (5 C, 2 SWS)..... 665
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M.Inf.1196: Object Tracking (5 C, 4 SWS)..... 668
M.Inf.1222: Specialisation Computer Networks (5 C, 2 SWS)..... 669
M.Inf.1223: Advanced Topics in Computer Networks (5 C, 3 SWS)..... 670
M.Inf.1226: Security and Cooperation in Wireless Networks (6 C, 4 SWS)..... 671
M.Inf.1230: Specialisation Software-defined Networks (SDN) (5 C, 2 SWS)..... 673
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M.Inf.1234: Emerging Topics in Advanced Computer Networks (6 C, 4 SWS)..... 676
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M.Inf.1256: Machine Learning (6 C, 4 SWS)....685
M.Inf.1257: Deep Learning (6 C, 4 SWS)....686
M.Inf.1291: Seminar Advanced Topics in Computer Security and Privacy (5 C, 2 SWS)....687
M.Inf.1501: Data Mining in Bioinformatics (6 C, 4 SWS)....689
M.Inf.1505: Models and Algorithms in Bioinformatics (6 C, 4 SWS)....690
M.Inf.1800: Practical Course Advanced Networking (6 C, 4 SWS)....691
M.Inf.1803: Practical Course in Software Engineering (6 C, 4 SWS)....692
M.Inf.1804: Practical Course in Software Quality Assurance (6 C, 4 SWS)....694
M.Inf.1808: Practical Course on Parallel Computing (6 C, 4 SWS)....696
M.Inf.1822: Practical Course in Data Fusion (6 C, 4 SWS)....698
M.Inf.1824: Practical Course on Computer Security and Privacy (6 C, 4 SWS)....699
M.Inf.1828: Lab Usable Security and Privacy (6 C, 4 SWS)....700
M.Inf.1832: Lab Privacy and Security in Robotics and AI Systems (6 C, 4 SWS)....702
M.Inf.1904: From written manuscripts to big humanities data (6 C, 4 SWS)....703
M.Inf.1905: Advanced Topics in Language and Text Processing (3 C, 2 SWS)....705
M.Inf.1906: Computational Semantics and Discourse Processing (6 C, 4 SWS)....707

VII. Faculty of Physics

1. Bachelor modules

B.Phy.1410: Certificate study focus Astrophysics/Geophysics (4 C)....188
B.Phy.1411: Certificate study focus in Biophysics/Physics of Complex Systems (4 C)....189
B.Phy.1412: Certificate study focus Solid State Physics / Materials Physics (4 C)....190
B.Phy.1413: Certificate study focus particle physics (4 C)....191
B.Phy.1512: Particle physics II - of and with quarks (6 C, 6 SWS)....192
B.Phy.1522: Solid State Physics II (6 C, 4 SWS)....193
B.Phy.1531: Introduction to Materials Physics (4 C, 4 SWS)....194
B.Phy.1532: Experimental methods of materials physics (6 C, 4 SWS)....195
B.Phy.1551: Introduction to Astrophysics (8 C, 6 SWS)....196
B.Phy.1561: Introduction to Physics of Complex Systems (6 C, 6 SWS)....197
B.Phy.1571: Introduction to Biophysics (6 C, 6 SWS)....198

B.Phy.1609: Foundations of the Unity of Human and Nature (4 C, 2 SWS)..... 199

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B.Phy.5404: Introduction to Statistical Machine Learning (3 C, 3 SWS)..... 201

B.Phy.5405: Active Matter (3 C, 2 SWS)..... 202

B.Phy.5503: Astrophysical Spectroscopy (3 C, 2 SWS)..... 203

B.Phy.5505: Data Analysis in Astrophysics (3 C, 2 SWS)..... 204

B.Phy.5509: Introduction to theoretical astrophysics (4 C, 2 SWS)..... 205

B.Phy.5511: Magnetohydrodynamics (3 C, 2 SWS)..... 206

B.Phy.5513: Numerical fluid dynamics (6 C, 4 SWS)..... 207

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B.Phy.5517: Physics of the Sun, Heliosphere and Space Weather: Key Knowledge (3 C, 2 SWS)... 209

B.Phy.5518: Physics of the Sun, Heliosphere and Space Weather: Space Weather Applications (3 C, 2 SWS)..... 210

B.Phy.5522: Solar Eclipses and Physics of the Corona (3 C, 2 SWS)..... 211

B.Phy.5523: General Relativity (6 C, 6 SWS)..... 212

B.Phy.5524: Seminar Advanced Topics of General Relativity Theory (4 C, 2 SWS)..... 213

B.Phy.5525: Seminar on Integrable Systems and Solitons (4 C, 2 SWS)..... 214

B.Phy.5529: Galaxies and the Intergalactic Medium (4 C, 2 SWS)..... 215

B.Phy.5530: Introduction to Cosmology (3 C, 2 SWS)..... 216

B.Phy.5532: Symmetries and Nonlinear Differential Equations in Physics (6 C, 6 SWS)..... 217

B.Phy.5533: Solar and Stellar Activity (6 C, 4 SWS)..... 219

B.Phy.5535: Fluid dynamics, nonlinear dynamics and turbulence (3 C, 2 SWS)..... 220

B.Phy.5538: Stellar Atmospheres (6 C, 4 SWS)..... 221

B.Phy.5539: Physics of Stellar Atmospheres (3 C, 2 SWS)..... 222

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B.Phy.5548: Stellar Structure and Evolution (3 C, 2 SWS)..... 225

B.Phy.5601: Theoretical and Computational Neuroscience I (3 C, 2 SWS)..... 226

B.Phy.5602: Theoretical and Computational Neuroscience II (3 C, 2 SWS)..... 227

B.Phy.5604: Foundations of Nonequilibrium Statistical Physics (3 C, 2 SWS)..... 228

B.Phy.5605: Computational Neuroscience: Basics (3 C, 2 SWS)..... 229

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B.Phy.5628: Pattern Formation (6 C, 4 SWS)..... 237
B.Phy.5631: Self-organization in physics and biology (4 C, 2 SWS)..... 239
B.Phy.5632: Current topics in turbulence research (4 C, 2 SWS)..... 240
B.Phy.5635: Introduction to Chaotic Behavior I: Dissipative Systems (3 C, 2 SWS)..... 241
B.Phy.5636: Introduction to Chaotic Behavior II: Hamiltionian Systems (3 C, 2 SWS)..... 242
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B.Phy.5649: Biomolecular Physics and Simulations (4 C, 2 SWS)..... 248
B.Phy.5651: Advanced Computational Neuroscience (3 C, 2 SWS)..... 249
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B.Phy.5656: Experimental work at large scale facilities for X-ray photons (3 C, 3 SWS)..... 251
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B.Phy.5658: Statistical Biophysics (6 C, 4 SWS)..... 254
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B.Phy.5664: Excursion to DESY and the European XFEL, Hamburg (3 C, 2 SWS)..... 259
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B.Phy.5669: Seminar on Living Matter Physics (4 C, 2 SWS)..... 261
B.Phy.5670: Introduction to Magnetic Resonance Imaging (6 C, 4 SWS)..... 262
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B.Phy.5673: Cell Mechanics (6 C, 6 SWS)..... 264

B.Phy.5674: Modern Image Processing (3 C, 2 SWS)....265

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B.Phy.5682: Seminar: Special Topics in Cell Mechanics (4 C, 2 SWS)....270

B.Phy.5683: Theoretical Biophysics (8 C, 6 SWS)....271

B.Phy.5684: Modern Image Processing (4 C, 2 SWS)....272

B.Phy.5686: Seminar: Oral presentations at scientific conferences (focus on biophysics) (4 C, 2 SWS)....273

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B.Phy.5718: Mechanisms and Materials for Renewable Energy: Photovoltaics (4 C, 2 SWS)....277

B.Phy.5719: Mechanisms and Materials for Renewable Energy: Solar heat, Thermoelectric, solar fuel (4 C, 2 SWS)....278

B.Phy.5720: Introduction to Ultrashort Pulses and Nonlinear Optics (3 C, 2 SWS)....279

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B.Phy.5724: Hands-on course on Density-Functional calculations 1+2 (6 C, 6 SWS)....281

B.Phy.5725: Renormalization group theory and applications (6 C, 6 SWS)....282

B.Phy.5802: Symmetries in Quantum Field Theory (3 C, 2 SWS)....283

B.Phy.5805: Quantum field theory I (6 C, 6 SWS)....284

B.Phy.5808: Interactions between radiation and matter - detector physics (3 C, 3 SWS)....285

B.Phy.5809: Hadron-Collider-Physics (3 C, 3 SWS)....286

B.Phy.5810: Physics of the Higgs boson (3 C, 3 SWS)....287

B.Phy.5811: Statistical methods in data analysis (3 C, 3 SWS)....288

B.Phy.5812: Physics of the top-quark (3 C, 3 SWS)....289

B.Phy.5814: Particle Physics 3 - of and with leptons (6 C, 6 SWS)....290

B.Phy.5815: Seminar on Introductory Topics in Particle Physics (4 C, 2 SWS)....291

B.Phy.5901: Advanced Computer Simulation (6 C, 4 SWS)....292

B.Phy.7601(Bio): Computational Neuroscience: Basics (4 C, 2 SWS)....293

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M.MtL.1002: Introduction to Physics of Complex Systems (6 C, 6 SWS)..... 801

M.MtL.1005: Methods and Topics from Matter to Life (10 C, 4 SWS).....802

M.MtL.1006: Modern Experimental Methods (6 C, 6 SWS).....803

M.MtL.1007: Biochemistry and Biophysics (6 C, 7 SWS).....804

M.MtL.1010: Synthetic Chemistry (6 C, 4 SWS).....805

M.MtL.1011: Bioengineering/Synthetic Biology (5 C, 3 SWS)..... 807

M.MtL.1012: Biophysics and Physical Chemistry of Life (8 C, 8 SWS).....809

M.MtL.1013: Macromolecular Structures and Functions (5 C, 8 SWS)..... 811

M.MtL.1014: Bioconjugation & Imaging Chemistry (3 C, 2 SWS).....813

M.MtL.1015: Genome Engineering (4 C, 4 SWS).....814

M.MtL.1016: Chemical Biology (4 C, 2 SWS).....816

M.MtL.1017: GlycoSciences (3 C, 2 SWS)..... 818

M.MtL.1019: Data Science & Simulations (3 C, 2 SWS)..... 819

M.MtL.1020: Methods of quantitative analysis (3 C, 2 SWS)..... 821

M.MtL.1021: Synthetic Cells & Virology (4 C, 4 SWS)..... 823

M.MtL.1022: Supramolecular Chemistry (5 C, 4 SWS)..... 825

M.MtL.1023: Theoretical Biophysics (6 C, 6 SWS).....827

M.MtL.1024: Quantitative Analysis of the Chemistry of Life (6 C, 4 SWS).....829

M.MtL.1025: Spectroscopy of Biomolecules (6 C, 7 SWS)..... 831

M.MtL.1026: Biofabrication & Tissue Engineering (6 C, 3 SWS).....833

M.MtL.1103: Remote Laboratory Work (3 C, 1 SWS)..... 835

M.MtL.1104: Lab Rotation I (13 C)..... 836

M.MtL.1105: Lab Rotation II (13 C)..... 837

M.MtL.1106: Matter to Life Internship (6 C, 6 SWS)..... 838

M.MtL.1107: Lab Rotation (30 C, 40 SWS)..... 839

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M.MtL.1109: Ethics in Synthetic Biology – Internship (3 C, 2 SWS)..... 841
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M.MtL.1202: Professional Skills in Science (3 C, 2 SWS)..... 845
M.MtL.1203: Results of the Research Projects (3 C, 2 SWS)..... 846
M.MtL.1204: Preparation for Interdisciplinary Studies (1 C)..... 847
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M.Phy-AM.011: Computer simulation methods in statistical physics (3 C, 2 SWS)..... 883
M.Phy-AM.012: Astrophysical Properties: From planets to cosmology (12 C, 8 SWS)..... 884
M.Phy-NF.7601: X-ray Tomography for Students of Medicine, Biology, Agriculture, Forestry (3 C, 2 SWS)..... 885
M.Phy.1401: Advanced Lab Course I (6 C, 6 SWS)..... 887
M.Phy.1402: Advanced Lab Course II (6 C, 6 SWS)..... 888
M.Phy.1403: Internship (6 C, 6 SWS)..... 889
M.Phy.1404: Methods of Computational Physics (6 C, 6 SWS)..... 890
M.Phy.1405: Advanced Computational Physics (6 C, 6 SWS)..... 891
M.Phy.409: Research Seminar Astro-/Geophysics (4 C, 2 SWS)..... 892
M.Phy.410: Research Seminar Biophysics/Physics of Complex Systems (4 C, 2 SWS)..... 893
M.Phy.411: Research Seminar Solid State/Materials Physics (4 C, 2 SWS)..... 894
M.Phy.412: Research Seminar Particle Physics (4 C, 2 SWS)..... 895
M.Phy.413: General Seminar (4 C, 2 SWS)..... 896
M.Phy.414: Research Lab Course in Theoretical Physics (18 C)..... 897
M.Phy.415: Research Seminar Theoretical Physics (4 C, 2 SWS)..... 898
M.Phy.5401: Advanced Statistical Physics (6 C, 6 SWS)..... 899
M.Phy.5403: Seminar Classical-Quantum Connections in Theoretical Physics (4 C, 2 SWS)..... 900
M.Phy.5406: Current topics in theoretical physics (4 C, 4 SWS)..... 901
M.Phy.541: Advanced Topics in Classical Theoretical Physics I (6 C, 6 SWS)..... 902

M.Phy.542: Advanced Topics in Classical Theoretical Physics II (6 C, 4 SWS)..... 903

M.Phy.543: Advanced Topics in Theoretical Quantum Physics I (6 C, 6 SWS)..... 904

M.Phy.544: Advanced Topics in Theoretical Quantum Physics II (6 C, 4 SWS)..... 905

M.Phy.546: Seminar Advanced Topics in Theoretical Physics (4 C, 2 SWS)..... 906

M.Phy.551: Advanced Topics in Astro-/Geophysics I (6 C, 6 SWS)..... 907

M.Phy.552: Advanced Topics in Astro-/Geophysics II (6 C, 4 SWS)..... 908

M.Phy.556: Seminar Advanced Topics in Astro-/Geophysics (4 C, 2 SWS)..... 909

M.Phy.5601: Seminar Computational Neuroscience/Neuro-informatics (4 C, 2 SWS)..... 910

M.Phy.5604: Biomedicine imaging physics and medical physics (6 C, 4 SWS)..... 911

M.Phy.5605: Nanooptics and Plasmonics (6 C, 4 SWS)..... 912

M.Phy.5608: Liquid State Physics (4 C, 2 SWS)..... 913

M.Phy.561: Advanced Topics in Biophysics/Physics of complex systems I (6 C, 6 SWS)..... 915

M.Phy.5611: Cell biophysics across scales (6 C, 4 SWS)..... 916

M.Phy.5612: Microfluidics (3 C, 2 SWS)..... 917

M.Phy.5613: Lecture: Principles and Applications of Synchrotron and Free Electron Laser Radiation (3 C, 4 SWS)..... 918

M.Phy.5614: Lab Course: Principles and Applications of Synchrotron and Free Electron Laser Radiation (3 C, 2 SWS)..... 920

M.Phy.5615: Differential Forms For Physicists (3 C, 2 SWS)..... 922

M.Phy.562: Advanced Topics in Biophysics/Physics of complex systems II (6 C, 4 SWS)..... 923

M.Phy.566: Seminar Advanced Topics in Biophysics/Complex Systems (4 C, 2 SWS)..... 924

M.Phy.5701: Advanced Solid State Theory (6 C, 6 SWS)..... 925

M.Phy.5705: Materials Physics I: Microstructure-Property-Relations (4 C, 3 SWS)..... 926

M.Phy.5706: Materials Physics II: Kinetics and Phase Transformations (4 C, 3 SWS)..... 927

M.Phy.5707: Materials research with electrons (3 C, 2 SWS)..... 928

M.Phy.5709: Physics of Semiconductor Nanostructures (3 C, 2 SWS)..... 929

M.Phy.571: Advanced Topics in Solid State/Materials Physics I (6 C, 6 SWS)..... 930

M.Phy.5711: Surface Physics (3 C, 2 SWS)..... 931

M.Phy.572: Advanced Topics in Solid State/Materials Physics II (6 C, 4 SWS)..... 932

M.Phy.576: Seminar Advanced Topics in Solid State/Materials Physics (4 C, 2 SWS)..... 933

M.Phy.5801: Detectors for particle physics and imaging (3 C, 3 SWS)..... 934

M.Phy.5803: Symmetries in Quantum Field Theory (3 C, 2 SWS)..... 935

M.Phy.5805: Quantum Field Theory II (3 C, 3 SWS)..... 936
M.Phy.5806: Detectors for particle physics and imaging (3 C, 3 SWS)..... 937
M.Phy.5807: Particle Physics III - of and with leptons (6 C, 6 SWS)..... 938
M.Phy.5808: Particle Physics 3 - of and with leptons (6 C, 6 SWS)..... 939
M.Phy.5809: Axiomatic Quantum Field Theory (3 C, 3 SWS)..... 940
M.Phy.581: Advanced Topics in Nuclear and Particle Physics I (6 C, 6 SWS)..... 941
M.Phy.582: Advanced Topics in Nuclear and Particle Physics II (6 C, 4 SWS)..... 942
M.Phy.586: Seminar Advanced Topics in Nuclear and Particle Physics (4 C, 2 SWS)..... 943
M.Phy.603: Writing scientific articles (6 C, 2 SWS)..... 944

VIII. Faculty of Law

http://www.uni-goettingen.de/en/42867.html

IX. University Medical Center Göttingen

http://www.med.uni-goettingen.de/index_en.html

X. Faculty of Humanities

1. Bachelor modules

B.AS.101: Analysis and Interpretation (6 C, 4 SWS)..... 39
B.AS.102: Language and Academic Skills (6 C, 3 SWS)..... 40
B.AS.103: Film and Media Studies (6 C, 4 SWS)..... 42
B.AS.201a: Cultural History of American Literature I (6 C, 2 SWS)..... 43
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B.AS.403: Topics in Literary and Media Studies (9 C, 4 SWS)..... 54
B.AS.501: Bachelor Degree Course North American Studies (3 C, 2 SWS)..... 55
B.Ara.23: Methods and Theories of Area Studies (3 C, 2 SWS)..... 56

B.Eng.101: Basic Skills: Linguistics, Literature and Culture (6 C, 4 SWS)..... 82

B.Eng.201: Foundations of English: English Grammar and Academic Writing Practice (5 C, 3 SWS)..... 84

B.Eng.202: Foundations of English: Oral Competence (5 C, 4 SWS)..... 86

B.Eng.203: Writing for Professional Purposes, Culture and Vocabulary (8 C, 6 SWS)..... 87

B.Eng.204: Translation, Culture and Vocabulary (8 C, 6 SWS)..... 89

B.Eng.205: Writing for Professional Purposes (5 C, 4 SWS)..... 91

B.Eng.206: Translation and Culture (5 C, 4 SWS)..... 93

B.Eng.207: Translation and Vocabulary (5 C, 4 SWS)..... 95

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B.Eng.231: Advanced English Language Skills (Style and Vocabulary) (6 C, 2 SWS)..... 98

B.Eng.251: Additional Module: Advanced English Language Skills (Creative Writing) (3 C, 2 SWS)..... 100

B.Eng.252: Additional Module: Aspects of British, Irish or American Culture and Institutions (3 C, 2 SWS)..... 101

B.Eng.253: Additional Module: Advanced English Language Skills (Oral/Listening Competences) (3 C, 2 SWS)..... 102

B.Eng.254: Additional Module: Advanced English Language Skills (Written English) (3 C, 2 SWS)..... 103

B.Eng.271: Comprehensive Language, Culture and Institutions Module for Students from Abroad (6 C, 2 SWS)..... 104

B.Eng.272: Additional Module: English Language Practice (5 C, 4 SWS)..... 105

B.Eng.273: Additional Module: Advanced English Language Skills (Oral/Listening Competences) (6 C, 2 SWS)..... 107

B.Eng.274: Additional Module: Aspects of British, Irish or American Culture and Institutions (3 C, 2 SWS)..... 108

B.Eng.304: Overview: Topics and Themes in Anglophone Literature and Culture (6 C, 2 SWS)..... 109

B.Eng.305: Periods in Anglophone Literature and Culture (7 C, 1 SWS)..... 111

B.Eng.331: Advanced Studies in Anglophone Literature: Focus on Literature (6 C, 2 SWS)..... 113

B.Eng.332: Advanced Studies in British Culture (6 C, 2 SWS)..... 114

B.Eng.351: Additional Module: Anglophone Literature and Culture (4 C, 2 SWS)..... 115

B.Eng.401: North American Literature and Culture I (8 C, 4 SWS)..... 116

B.Eng.402: North American Literature and Culture II (7 C, 4 SWS)..... 118

B.Eng.403: North American Literature and Culture III (6 C, 4 SWS)..... 120

B.Eng.404: Advanced Module: North American Media and Visual Culture (6 C, 4 SWS)..... 122
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B.Eng.452: Additional Module: American Cultural History (4 C, 2 SWS)..... 126
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B.Eng.602: Topics of Medieval English Studies (6 C, 4 SWS)..... 134
B.Eng.603: Peer-Assisted Medieval English Studies (7 C, 4 SWS)..... 136
B.Eng.631: Advanced Medieval English Studies (6 C, 2 SWS)..... 138
B.Eng.701: Introduction to English Language Teaching and Cultural Learning (6 C, 4 SWS)..... 139
B.Eng.702: Introduction to English Language Teaching (at Vocational Schools) (4 C, 3 SWS)..... 142
B.Eng.771: Teaching English as a Foreign Language (for Students from Abroad) (4 C, 2 SWS)..... 144
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2. Master modules

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M.AS.02: American Literature (11 C, 4 SWS)..... 379
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XIII. Faculty of Economic Sciences

The Faculty of Economic Sciences offers an excellent international study environment for students coming from outside of Germany including both those who plan to complete their entire degree in Göttingen, as well as those who plan to visit for a semester abroad.

Our faculty offers many English-language courses (*http://www.uni-goettingen.de/en/winter-semester-20142015/474472.html*) for short-term visitors and exchange students for both undergraduate and graduate students.

Every semester we offer at least 30 ECTS credits worth of courses in business administration and economics for BA students (11 courses offered in the 2014/15 winter semester). There are also many courses in English for MA students in both business administration and economics. In the 2014/15 winter semester, the faculty offered 29 courses for economic students and 14 courses business administration students.

For students interested in completing their entire degree in Göttingen, the faculty offers an entirely English-language MA degree indevelopment economics (*http://www.uni-goettingen.de/de/203661.html*). Our programme is the only university-level master's programme in development economics in Germany, and is based on research groups from various areas including agricultural economics and rural development, and economics. The programme duration is four semesters, and can even be coupled with a double degree programme with Stellenbosch University in South Africa.

In addition to the course offerings, our faculty offers a vibrant and internationally-oriented research community with research projects abroad, including visiting faculty and doctoral researchers from across the globe.

For further information about the Faculty, please visit:

http://www.uni-goettingen.de/en/international-students--researchers/427247.html

We look forward to your visit.

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M.WIWI-HGM.0001: Economic, Business and Social History I (12 C, 6 SWS)....1054
M.WIWI-HGM.0004: History of Global Markets: Perspectives (6 C, 2 SWS)....1056
M.WIWI-HGM.0007: Global Varieties of Capitalism (6 C, 2 SWS)....1057
M.WIWI-HGM.1001: History of Global Markets I (12 C, 4 SWS)....1058
M.WIWI-QMW.0001: Generalized Regression (6 C, 4 SWS)....1060
M.WIWI-QMW.0004: Econometrics I (6 C, 6 SWS)....1062
M.WIWI-QMW.0005: Econometrics II (6 C, 4 SWS)....1064
M.WIWI-QMW.0009: Introduction to Time Series Analysis (6 C, 4 SWS)....1065
M.WIWI-QMW.0012: Multivariate Time Series Analysis (6 C, 4 SWS)....1067
M.WIWI-QMW.0013: Applied Econometrics (6 C, 4 SWS)....1069
M.WIWI-QMW.0016: Spatial Statistics (6 C, 4 SWS)....1071
M.WIWI-QMW.0021: Introduction to Statistical Programming (3 C, 2 SWS)....1073
M.WIWI-QMW.0025: Development Microeconometrics (6 C, 4 SWS)....1074
M.WIWI-QMW.0027: Advanced Meta-Research in Economics (6 C, 4 SWS)....1076
M.WIWI-QMW.0033: Current Topics in Applied Statistics (6 C, 2 SWS)....1078
M.WIWI-QMW.0034: Python for Econometrics (6 C, 2 SWS)....1079
M.WIWI-QMW.0036: Economic and Business Forecasting (6 C, 4 SWS)....1081

M.WIWI-QMW.0037: Advanced Bayesian Inference (6 C, 4 SWS)....1083
M.WIWI-QMW.0039: Seminar Economic and Business Forecasting (6 C, 2 SWS)....1085
M.WIWI-QMW.0040: Introduction to Statistical Methods in Economic Sciences (6 C, 4 SWS)....1087
M.WIWI-QMW.0041: Stochastic Processes (6 C, 4 SWS)....1089
M.WIWI-QMW.0042: Computational Statistics (6 C, 4 SWS)....1090
M.WIWI-QMW.0043: Interactive Representation of Statistical Methods (6 C, 2 SWS)....1092
M.WIWI-VWL.0001: Advanced Microeconomics (6 C, 4 SWS)....1094
M.WIWI-VWL.0008: Development Economics I: Macro Issues in Economic Development (6 C, 4 SWS)....1096
M.WIWI-VWL.0009: Development Economics II: Micro Issues in Development Economics (6 C, 4 SWS)....1098
M.WIWI-VWL.0019: Advanced Development Economics (6 C, 3 SWS)....1099
M.WIWI-VWL.0021: Gender and Development (6 C, 3 SWS)....1101
M.WIWI-VWL.0024: Seminar on the Economic Situation of Latin America in the 21st Century: 'Challenges of Economic Development in Latin America' (6 C, 2 SWS)....1102
M.WIWI-VWL.0025: Seminar Development Economics IV (6 C, 2 SWS)....1104
M.WIWI-VWL.0035: Economic Effects of Regional Integration (6 C, 2 SWS)....1105
M.WIWI-VWL.0040: Empirical Trade Issues (6 C, 3 SWS)....1106
M.WIWI-VWL.0041: Panel Data Econometrics (6 C, 4 SWS)....1109
M.WIWI-VWL.0042: European Economy (6 C, 4 SWS)....1111
M.WIWI-VWL.0046: Topics in European and Global Trade (6 C, 2 SWS)....1114
M.WIWI-VWL.0054: Behavioral Game Theory (6 C, 4 SWS)....1116
M.WIWI-VWL.0065: Economics of Crime (6 C, 4 SWS)....1118
M.WIWI-VWL.0083: Economic Reform and Social Justice in India (6 C, 3 SWS)....1119
M.WIWI-VWL.0086: Macroeconomics of Open Economies (6 C, 4 SWS)....1121
M.WIWI-VWL.0092: International Trade (6 C, 4 SWS)....1123
M.WIWI-VWL.0095: International Political Economy (6 C, 4 SWS)....1125
M.WIWI-VWL.0096: Essentials of Global Health (6 C, 3 SWS)....1127
M.WIWI-VWL.0099: Poverty & Inequality (6 C, 3 SWS)....1129
M.WIWI-VWL.0101: Theory and Politics of International Taxation (6 C, 4 SWS)....1131
M.WIWI-VWL.0105: Controversies in Development Economics (6 C, 2 SWS)....1133
M.WIWI-VWL.0112: Financial Markets and the Macroeconomy (6 C, 2 SWS)....1135

M.WIWI-VWL.0113: Macroeconometrics (6 C, 4 SWS)....1136
M.WIWI-VWL.0122: Behavioral Development Economics (6 C, 2 SWS)....1138
M.WIWI-VWL.0123: Recent Topics in Macroeconomics (6 C, 2 SWS)....1139
M.WIWI-VWL.0124: Seminar in Financial Econometrics (6 C, 2 SWS)....1140
M.WIWI-VWL.0128: Deep Determinants of Growth and Development (6 C, 2 SWS)....1141
M.WIWI-VWL.0132: New Developments in International Economics (6 C, 2 SWS)....1143
M.WIWI-VWL.0135: Advanced Economic Growth (6 C, 4 SWS)....1144
M.WIWI-VWL.0137: Seminar Games in Economic Development (6 C, 2 SWS)....1146
M.WIWI-VWL.0138: Quasi-Experiments in Development Economics (6 C, 3 SWS)....1147
M.WIWI-VWL.0140: Economics of Education (6 C, 4 SWS)....1149
M.WIWI-VWL.0143: Mind, Society and Development (6 C, 2 SWS)....1150
M.WIWI-VWL.0144: Migration Economics: Replication Course (6 C, 4 SWS)....1151
M.WIWI-VWL.0146: Political Economy of Global Energy Markets (6 C, 2 SWS)....1153
M.WIWI-VWL.0147: Empirical Political Economy (6 C, 4 SWS)....1155
M.WIWI-VWL.0152: Applied International Economics (6 C, 2 SWS)....1157
M.WIWI-VWL.0162: Firms in International Trade (6 C, 4 SWS)....1158
M.WIWI-VWL.0163: Tax and Fiscal Competition (6 C, 4 SWS)....1160
M.WIWI-VWL.0165: Introduction to PsychoEconomics (6 C, 4 SWS)....1162
M.WIWI-VWL.0167: Topics in International Trade (6 C, 2 SWS)....1164
M.WIWI-VWL.0168: Economics of Multinational Enterprises (6 C, 4 SWS)....1165
M.WIWI-VWL.0169: The Economics of European Integration (6 C, 4 SWS)....1166
M.WIWI-VWL.0174: China's Economic and Political Development (6 C, 2 SWS)....1168
M.WIWI-VWL.0175: International Development Policy (6 C, 4 SWS)....1169
M.WIWI-VWL.0179: Seminar Monetary Economics (6 C, 2 SWS)....1171
M.WIWI-VWL.0180: Methods in Advanced Microeconomics (6 C, 4 SWS)....1172
M.WIWI-VWL.0181: Global Production: Firms, Contracts and Trade Structure (6 C, 4 SWS)....1173
M.WIWI-VWL.0182: Evaluating Development Effectiveness (6 C, 2 SWS)....1175
M.WIWI-VWL.0183: Geospatial Analysis for Development Economics (6 C, 2 SWS)....1177
M.WIWI-VWL.0184: Empirical Analysis of Conflict and Development (6 C, 2 SWS)....1179
M.WIWI-VWL.0187: Social Assistance in Developing Countries (6 C, 2 SWS)....1181

M.WIWI-VWL.0188: Ethics and Security in “Field Research” for Development Economics (6 C, 2 SWS)..... 1183

M.WIWI-VWL.0189: Natural Language Processing (NLP) in Macroeconomics (6 C, 2 SWS).....1185

M.WIWI-VWL.0190: Seminar Topics in Urban Economics (6 C, 2 SWS).....1187

M.WIWI-VWL.0191: Seminar Advanced Topics in Urban Economics (12 C, 4 SWS)..... 1189

M.WIWI-VWL.0193: The Economics of Health and Aging (6 C, 2 SWS)..... 1191

M.WIWI-VWL.0194: Field Research in Development Economics (6 C, 3 SWS)..... 1193

M.WIWI-VWL.0195: Design of Socio-Economic Surveys (6 C, 2 SWS).....1195

M.WIWI-VWL.0196: African Development (6 C, 2 SWS).....1197

M.WIWI-VWL.0197: Advanced Topics in International Trade (6 C, 3 SWS)..... 1199

M.WIWI-VWL.0198: Industrial Economics (6 C, 4 SWS).....1201

M.WIWI-VWL.0199: Geoeconomics and Geopolitics (6 C, 2 SWS)..... 1202

M.WIWI-VWL.0200: Empirical International Trade (6 C, 4 SWS)..... 1203

M.WIWI-WB.0001: Scientific Programming (3 C, 1 SWS)..... 1205

M.WIWI-WB.0012: Diverse Perspectives and Critical Reflections on ‘Development’ and ‘Development Economics’ (6 C, 2 SWS).....1207

M.WIWI-WB.0016: Growth Econometrics with Stata (3 C, 2 SWS).....1209

M.WIWI-WIN.0001: Modeling and System Development (6 C, 2 SWS)..... 1211

M.WIWI-WIN.0008: Change & Run IT (6 C, 4 SWS)..... 1213

M.WIWI-WIN.0026: Machine Intelligence: Concepts and Applications (6 C, 2 SWS).....1215

M.WIWI-WIN.0032: Information Systems Research (12 C, 2 SWS).....1216

M.WIWI-WIN.0033: Digital Platforms (6 C, 4 SWS)..... 1218

M.WIWI-WIN.0034: Digital Strategy (6 C, 4 SWS)..... 1220

M.WIWI-WIN.0035: Research Seminar on Information Systems and Digitalization (6 C, 2 SWS)....1222

M.WIWI-WIN.0038: Digital Health (6 C, 4 SWS)..... 1224

XIV. German as a foreign language

1. GER-Niveau A1

SK.DaF.A1.1-4Std: German Language Course - A1.1 (6 C, 4 SWS).....1242

SK.DaF.A1.2-4Std: German Language Course - A1.2 (6 C, 4 SWS).....1243

2. GER-Niveau A2

SK.DaF.A2.1-4Std: German Language Course - A2.1 (6 C, 4 SWS)....1244

SK.DaF.A2.2-4Std: German Language Course - A2.2 (6 C, 4 SWS)....1245

3. GER-Niveau B1

SK.DaF.Gr-B1-2Std: German Grammar B1 (3 C, 2 SWS)....1246

4. GER-Niveau B2

SK.DaF.Gr-B2-2Std: German Grammar B2 (3 C, 2 SWS)....1247

SK.DaF.LK-B2-2Std: German Discursive Cultural Studies B2 (3 C, 2 SWS)....1249

5. GER-Niveau C1

SK.DaF.Gr-C1-2Std: German Grammar C1 (3 C, 2 SWS)....1248

SK.DaF.SP-B2/C1-1Std: Communication Skills in Action B2/C1 (1 C, 1 SWS)....1250

SK.DaF.SP-B2/C1-2Std: Communication Skills in Action B2/C1 (3 C, 2 SWS)....1251

SK.DaF.SP-B2/C1-4Std: Communicational Skills in Action B2/C1 (6 C, 4 SWS)....1252

6. GER-Niveau C2

7. Modulkurse

8. Intensivkurse

Georg-August-Universität Göttingen **Module B.AS.101: Analysis and Interpretation**	6 C 4 WLH

Learning outcome, core skills: Studierende erhalten einen Überblick über grundlegende Konzepte und Methoden des Faches "American Studies", sowohl in seiner literatur- als auch in seiner kulturwissenschaftlichen Ausrichtung, mit einem besonderen Fokus auf literaturwissenschaftlichen und textanalytischen Grundlagen. Sie erschließen und verstehen die Einheit des Faches über die differenzierten Teilbereiche hinaus. Sie erwerben Grundlagenkenntnisse der Techniken wissenschaftlichen Arbeitens und wenden diese im Kontext eigener systematisch-formaler Textanalyse an.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Einführungsseminar "Introduction to the Study of American Literature and Culture"	2 WLH

Course: Seminar "Topics in American Studies" (Seminar)	2 WLH

Examination: Take Home Exam (max. 3000 words), not graded **Examination prerequisites:** regelmäßige aktive Teilnahme; mündliche Leistung (Referat/Präsentation ca. 15 min.), ggf. 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (Insg. max. 750 Wörter) **Examination requirements:** Grundlegende Fähigkeit zur Text- und Literaturanalyse, sowie zur Recherche von und zum kritischen Umgang mit Sekundärliteratur; Fähigkeit, eigene Forschungsthesen zu formulieren und Forschungsfragen selbstständig wissenschaftlich zu bearbeiten	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.102: Language and Academic Skills**	6 C 3 WLH

Learning outcome, core skills: Das Modul führt in die Grundlagen des akademischen Arbeitens ein und vermittelt dabei integrativ die Arbeitsansätze und Konzepte der amerikanistischen Literatur- und Kulturwissenschaft. Das Modul vermittelt eine Orientierung über grundlegende Arbeitsmethoden und -techniken des wissenschaftlichen Arbeitens, indem es insbesondere Gliederungsaspekte wissenschaftlicher Hausarbeiten und affiner Texte, Thesenfindung und -erstellung oder auch wissenschaftlichen Duktus anhand von Übungen erprobt und festigt. Des Weiteren werden in diesem Modul für universitäre Lehrveranstaltungen wesentliche mündliche Kompetenzen wie z.B. Präsentationstechniken oder Moderationsfähigkeiten eingeübt. Die Studierenden werden so vertraut gemacht mit den Grundprinzipien des akademischen Arbeitens in Wort und Schrift; sie entwickeln Fähigkeiten bei der Analyse und Produktion von wissenschaftlichen Texten und der mündlichen Kommunikation über diese Gegenstände. Das Modul gestattet eine Förderung des Textbewusstseins bei der Erstellung von Texten und hebt einen bewussten Schreibprozess sowie einen kritischen Umgang in der Analyse von Texten und Schreibprozessen hervor.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Academic Writing	1 WLH
Examination: Portfolio (max. 2000 words), not graded **Examination prerequisites:** regelmäßige aktive Teilnahme; kleinere mündliche und schriftliche Aufgaben und Übungen (z.B. Gruppenarbeiten, Erstellung eines Thesenpapiers und Exposés (max. 1500 Wörter) oder vergleichbare Leistungen **Examination requirements:** Fähigkeit zur sicheren und systematischen Textproduktion; Fähigkeit zur Recherche von und zum kritischen Umgang mit Sekundärliteratur; Fähigkeit, eigene Forschungsthesen zu formulieren und Forschungsfragen wissenschaftlich zu bearbeiten. Das Portfolio wird in der Lehrveranstaltung 1 erbracht.	6 C

Course: Research and Professional Skills	2 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.103: Film and Media Studies**	6 C 4 WLH

Learning outcome, core skills: Studierende erlernen Grundlagen des wissenschaftlichen Umgangs (Analyse, Interpretation) mit audiovisuellen Medien im Kontext der amerikanischen Kulturgeschichte (z.B. bildende Kunst, Film, Fotografie, Fernsehen und digitale Bilder). Sie erweitern und vertiefen kulturwissenschaftliche Kenntnisse und anwendungsbezogene Methoden zur Analyse audiovisueller Medien und visueller Kultur. Sie entwickeln ein Bewusstsein für die Spezifität und Materialität unterschiedlicher medialer Darstellungs- und Rezeptionsformen. Sie erwerben die Fähigkeit zum synergetischen Gebrauch von literatur-, kultur- und medienwissenschaftlichen Forschungstechniken.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Einführungsseminar "Introduction to Film and Media Analysis"	2 WLH

Course: Medienwissenschaftliche Analyse und Interpretation Voraussetzung für die Teilnahme ist der erfolgreiche Besuch des Einführungsseminars "Introduction to Film and Media Analysis"	2 WLH
Examination: Term Paper (max. 3000 words) **Examination prerequisites:** regelmäßige aktive Teilnahme; mündliche Leistung (Referat/Präsentation ca. 15 min.), ggf. 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (Insg. max. 750 Wörter) bzw. vergleichbare schriftliche Leistungen (Take Home Exam) **Examination requirements:** Überblickswissen zur Film- und Medienanalyse, mit besonderer Berücksichtigung amerikanischer Filme und visueller Kultur; Fähigkeit zur kultur- und medienwissenschaftlichen Analyse audiovisueller und digitaler Texte und Medien; Fähigkeit, eigene Forschungsthesen zu formulieren und Forschungsfragen selbstständig wissenschaftlich zu bearbeiten. Die Hausarbiet wird in Lehrveranstaltung 2 erbracht.	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.201a: Cultural History of American Literature I**	6 C 2 WLH

Learning outcome, core skills: Studierende erwerben Kenntnisse der amerikanischen Literatur- und Kulturgeschichte der Epoche vom 16. bis zum frühen 19. Jahrhundert (historische Hintergründe, Schlüsselbegriffe und -konzepte, Inhalte und Strukturen kanonisierter Haupttexte und deren Bedeutung). In diesem ersten Modul des auf vier Module konzipierten Vorlesungszyklus werden insbesondere literatur- und kulturgeschichtliche Phänomene und Paradigmen im Kontext von *Exploration and Settlement* , der Revolutionszeit, der Aufklärung (*Enlightenment*), der frühen Republik und der *Jacksonian Era* in den Fokus gerückt. Studierende erlernen die Methodik historisch-hermeneutischen Textverständnisses sowie fachspezifischer methodologischer Ansätze, die die Auseinandersetzung mit diesen (Teil)Epochen prägt. Sie erwerben die Fähigkeit zur epochenspezifischen systematisch-formalen Textanalyse. Sie wenden grundlegende Techniken und Hilfsmittel literaturwissenschaftlicher Forschung in ihrer Annäherung an die Epoche an.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vorlesung (Lecture) *Course frequency:* every 4th semester	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Überblickswissen und Transferaufgaben Fähigkeit zur Einordnung von Texten in kulturhistorische Kontexte, Fähigkeit zur Anwendung literaturwissenschaftlicher Methoden der Analyse und Interpretation, Fähigkeit zur Anwendung von epochenrelevanten Schlüsselkonzepten und -theorien	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: 4-semestriger Zyklus: jedes Semester wird eine von vier Epochen angeboten	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.AS.201b: Cultural History of American Literature II**	6 C 2 WLH

Learning outcome, core skills: In diesem zweiten Modul des auf vier Semester konzipierten Vorlesungszyklus erwerben Studierende Kenntnisse der amerikanischen Literatur- und Kulturgeschichte des 19. Jahrhunderts. Historische Hintergründe, Schlüsselbegriffe und -konzepte, Inhalte und Strukturen kanonisierter Haupttexte und deren Bedeutung insbesondere der folgenden literarischen Teilepochen und Bewegungen stehen im Vordergrund: amerikanische Romantik (*American Renaissance*), Transzendentalismus, amerikanischer Bürgerkrieg (*Civil War*) und *Reconstruction* ; *Gilded Age* , *Regionalism* , Realismus und Naturalismus. Studierende erlernen die Methodik historisch-hermeneutischen Textverständnisses sowie fachspezifischer methodologischer Ansätze. Sie erwerben die Fähigkeit zur epochenspezifischen systematisch-formalen Textanalyse und wenden grundlegende Techniken und Hilfsmittel literaturwissenschaftlicher Forschung an	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vorlesung (Lecture) *Course frequency:* every 4th semester	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Überblickswissen und Transferaufgaben Fähigkeit zur Einordnung von Texten in kulturhistorische Kontexte, Fähigkeit zur Anwendung literaturwissenschaftlicher Methoden der Analyse und Interpretation, Fähigkeit zur Anwendung von epochenrelevanten Schlüsselkonzepten und -theorien	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: 4-semestriger Zyklus: jedes Semester wird eine von vier Epochen angeboten	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.AS.201c: Cultural History of American Literature III**	6 C 2 WLH

Learning outcome, core skills: In diesem dritten Modul des auf vier Semester konzipierten Vorlesungszyklus erwerben Studierende Kenntnisse der amerikanischen Literatur- und Kulturgeschichte des 20. Jahrhunderts, wobei der Fokus auf der literarischen Moderne, der Zeit der Roaring Twenties, der Great Depression, des Zweiten Weltkriegs und seinen (literarischen und kulturgeschichtlichen) Nachprägungen liegt. Historische Hintergründe, Schlüsselbegriffe und -konzepte, Inhalte und Strukturen kanonisierter Haupttexte und deren Bedeutung dieser (Teil)Epochen und Phänomene stehen dabei im Zentrum der Vorlesung. Studierende erlernen die Methodik historisch-hermeneutischen Textverständnisses sowie fachspezifischer methodologischer Ansätze. Sie erwerben die Fähigkeit zur epochenspezifischen systematisch-formalen Textanalyse. Sie wenden grundlegende Techniken und Hilfsmittel literaturwissenschaftlicher Forschung an.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vorlesung (Lecture) *Course frequency:* every 4th semester	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Überblickswissen und Transferaufgaben Fähigkeit zur Einordnung von Texten in kulturhistorische Kontexte, Fähigkeit zur Anwendung literaturwissenschaftlicher Methoden der Analyse und Interpretation, Fähigkeit zur Anwendung von epochenrelevanten Schlüsselkonzepten und -theorien	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: 4-semestriger Zyklus: jedes Semester wird eine von vier Epochen angeboten	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.AS.201d: Cultural History of American Literature IV**	6 C 2 WLH

Learning outcome, core skills: Im vierten und letzten Modul des auf vier Semester konzipierten Vorlesungszyklus erwerben Studierende Kenntnisse der amerikanischen Literatur- und Kulturgeschichte des späten 20. und frühen 21. Jahrhunderts (historische Hintergründe, Schlüsseltexte und -begriffe). Sie erlernen die Methodik historisch-hermeneutischen Textverständnisses sowie fachspezifischer Ansätze insbesondere zu folgenden Schwerpunkten und Teilepochen: "Postmodernism, New Ethnic Literatures, Recent Developments: American Literature and Culture from the 1950s to the Present". Sie erwerben die Fähigkeit zur epochenspezifischen systematisch-formalen Textanalyse und wenden grundlegende Techniken und Hilfsmittel literaturwissenschaftlicher Forschung an.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vorlesung (Lecture) *Course frequency:* every 4th semester	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Überblickswissen und Transferaufgaben Fähigkeit zur Einordnung von Texten in kulturhistorische Kontexte, Fähigkeit zur Anwendung literaturwissenschaftlicher Methoden der Analyse und Interpretation, Fähigkeit zur Anwendung von epochenrelevanten Schlüsselkonzepten und -theorien	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: 4-semestriger Zyklus: jedes Semester wird eine von vier Epochen angeboten	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.AS.202: American Cultural History and Rhetoric**	12 C 4 WLH

Learning outcome, core skills: Studierende erlernen Grundlagen des wissenschaftlichen Umgangs (Analyse, Interpretation) mit literarischen wie nicht-literarischen Texten (z.B. politische Pamphlete, Reden, Essays, Predigten, Verfassungstexte). Sie wenden kulturwissenschaftliche Methodik unter besonderer Berücksichtigung des Umgangs mit primär nicht-fiktionalen Texten an. Sie erwerben die Fähigkeit zum synergetischen Gebrauch von literatur- und kulturwissenschaftlichen Forschungstechniken.	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Cultural History and Rhetoric	2 WLH
Examination: Take Home Exam (max. 3500 words) **Examination prerequisites:** Regelmäßige aktive Teilnahme; Präsentation (in Form von Expertengruppen bzw. Moderationsteams), ggf. Quizzes oder vergleichbare Leistungen nach Maßgabe der Course Description **Examination requirements:** Überblickswissen und Transferaufgaben zur amerikanischen Kulturgeschichte; Fähigkeit zur literatur- und kulturwissenschaftlichen Analyse literarischer und nichtliterarischer Texte.	4 C

Course: Advanced Cultural History and Rhetoric (intensive writing)	2 WLH
Examination: 6 Response Logs (max. 3800 words) **Examination prerequisites:** regelmäßige aktive Teilnahme; Präsentation (in Form von Expertengruppen bzw. Moderationsteams, ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl, Leistungen (Insg. max. 750 Wörter) **Examination requirements:** Vertieftes Wissen und analytische Transferaufgaben zur amerikanischen Kulturgeschichte; fortgeschrittene Fähigkeit zur literatur- und kulturwissenschaftlichen Analyse literarischer und nichtliterarischer Texte . Nachweis dieser Kompetenzen/ Prüfungsanforderungen in Form von argumentativen Response Logs.	8 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.301: Critical Theory**	12 C 4 WLH

Learning outcome, core skills: Studierende sind in der Lage, grundlegende Fragestellungen und Positionen der Literatur-, Kultur- und Medientheorie zu identifizieren, zu diskutieren und anzuwenden. Durch erfolgreiche Teilnahme an diesem Modul erwerben sie damit die Fähigkeit zur theoretisch fundierten Analyse und Kritik literarischer und nichtliterarischer Texte sowie (audio)visueller und digitaler Medien wie bildende Kunst, Fotografie, Film, Fernsehen und Internet.	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Vorlesung "Introducing Critical Theory I: Approaches in Literary and Cultural Studies" (Lecture)	2 WLH
Examination: Klausur (90 Min.) oder mdl. Prüfung (ca. 30 Min.) **Examination requirements:** Allgemeines Verständnis grundlegender Fragestellungen und Positionen der Literatur- und Kulturtheorie; Fähigkeit zur Analyse theoretischer Texte und theoriegestützter Interpretation literarischer und kultureller Gegenstände und Phänomene.	6 C

Course: Vorlesung "Introducing Critical Theory II: Approaches and Methods in Media Studies" (Lecture)	2 WLH
Examination: Klausur (90 Min.) oder mdl. Prüfung (ca. 30 Min.) **Examination requirements:** Kritisches Verständnis grundlegender Fagestellungen und Positionen der für die American Studies relevanten Medientheorien; Fähigkeit zur Analyse theoretischer Texte und theoriegestützter Interpretation medialer Gegenstände und Inszenierungen.	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.AS.401: Theory and Practice of American Studies**	6 C 2 WLH

Learning outcome, core skills: Studierende vertiefen und erweitern ihre Kompetenzen zur theoriegeleiteten Textanalyse (anhand eines beispielhaften Forschungsproblems). Sie reflektieren die eigene Methodik vor dem Hintergrund fachspezifischer und interdisziplinärer Verfahrensweisen kritisch. Sie wenden diachrone und synchrone Methoden der American Studies in synergetischer Form an.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vertiefungsseminar "Fortgeschrittene Literatur- und kulturhistorische Analyse und Interpretation"	
Course: Independent Study In mindestens drei über die Vorlesungszeit verteilten Treffen werden die Studierenden zum selbständigen Arbeiten befähigt. Beim ersten Treffen wird ein von den Studierenden selbst gewähltes Thema im Gespräch mit der Lehrperson präzisiert und relevante Primär- und Sekundärliteratur bestimmt. Beim zweiten Treffen soll ein vorläufiges Thesenpapier bzw. Exposé (inkl. Bibliografie) vorliegen. Es werden die Arbeitsfortschritte besprochen sowie aufkommende Fragen zu den Inhalten der Texte und der Form des Thesenpapiers oder Exposés (max. 1500 Wörter) geklärt. Es können, falls notwendig, weitere Anregungen gegeben werden. Beim letzten Treffen werden die Ergebnisse diskutiert und abschließend kritisch beleuchtet. Der Independent-Study-Anteil umfasst 60 Stunden des gesamten Selbststudiums.	
Examination: Hausarbeit oder Forschungsbericht (max. 5000 words) **Examination prerequisites:** regelmäßige aktive Teilnahme; mündl. Leistung (Präsentation, Diskussionsleitung ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl. Leistungen (Insg. max. 750 Wörter); **Examination requirements:** Fähigkeit zur extensiven Literaturrecherche; Fähigkeit zum kritischen Umgang mit Sekundärliteratur; Fähigkeit, komplexe Forschungsthesen zu formulieren und selbstständig wissenschaftlich zu belegen	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5
Maximum number of students: 20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.402: Advanced American Studies**	6 C 2 WLH

Learning outcome, core skills: Studierende erschließen vertiefte fachwissenschaftliche Wissensbestände im Studienfach "American Studies" durch inhaltliche und methodologische Konzentration auf ausgewählte Themenbereiche des Fachs, die sich auf fortgeschrittener Ebene und auf Basis neuerer Paradigmen der Cultural und Literary Studies bewegen. Sie diskutieren aktuelle Forschungsansätze des Fachs kritisch und wenden diese im Zuge intensiver Forschung zu einem spezifischen Thema an.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Forschungsorientiertes Vertiefungsseminar	2 WLH
Course: Independent Study In mindestens drei über die Vorlesungszeit verteilten Treffen werden die Studierenden zum selbständigen Arbeiten befähigt. Beim ersten Treffen wird ein von den Studierenden selbst gewähltes Thema im Gespräch mit der Lehrperson präzisiert und relevante Primär- und Sekundärliteratur bestimmt. Beim zweiten Treffen soll ein vorläufiges Thesenpapier bzw. Exposé (inkl. Bibliografie) vorliegen. Es werden die Arbeitsfortschritte besprochen sowie aufkommende Fragen zu den Inhalten der Texte und der Form des Thesenpapiers oder Exposés (max. 1500 Wörter) geklärt. Es können, falls notwendig, weitere Anregungen gegeben werden. Beim letzten Treffen werden die Ergebnisse diskutiert und abschließend kritisch beleuchtet. Der Independent-Study-Anteil umfasst 60 Stunden des gesamten Selbststudiums.	
Examination: Hausarbeit oder Forschungsbericht (max. 5000 words) **Examination prerequisites:** regelmäßige aktive Teilnahme; mündl. Leistung (Präsentation, Diskussionsleitung ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl. Leistungen (Insg. max. 750 Wörter); **Examination requirements:** Fähigkeit zum kritischen Umgang mit amerikanischen Texten und Theorien; Fähigkeit zur extensiven Literaturrecherche; Fähigkeit, theoretische und praktische Ansätze der Literatur- und Kulturanalyse mündlich und schriftlich darzustellen und zu diskutieren, Fähigkeit, eigene Ansätze kritisch zu reflektieren, im wissenschaftlichen Dialog mit der Lehrperson anhand zu begründen und im fachlichen Kontext zu verorten	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students:	

20	

Additional notes and regulations:
Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.403: Topics in Literary and Media Studies**	9 C 4 WLH

Learning outcome, core skills: Studierende erweitern ihre Kenntnisse und Fähigkeiten zur Anwendung grundlegender Konzepte und Methoden des Faches "North American Studies", sowohl in seiner literatur-, kultur- als auch in seiner medienwissenschaftlichen Ausrichtung. Dabei erschließen sie themenbezogene Wissensgebiete des Fachs mit einem besonderen Fokus auf medien-, kultur- und literaturwissenschaftlichen sowie textanalytischen Grundlagen. Sie erweitern das Verständnis der Einheit des Faches über die differenzierten Teilbereiche hinaus. Sie erproben Grundlagenkenntnisse der Techniken wissenschaftlichen Arbeitens im Rahmen eigener Recherche und Analyse.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Literary Studies (Analysis & Interpretation)	2 WLH
Course: Media Studies (Analysis & Interpretation)	2 WLH
Examination: Term Paper (max. 5000 words) **Examination prerequisites:** regelmäßige aktive Teilnahme; mündliche Leistung (Präsentation, Diskussionsleitung ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftliche Leistungen (Insg. max. 750 Wörter) **Examination requirements:** Fähigkeit zur vertiefenden und vergleichenden Text-, Medien- und Literaturanalyse; Fähigkeit zur fortgeschrittenen Recherche von und zum kritischen Umgang mit Sekundärliteratur; Fähigkeit, eigene Forschungsthesen zu formulieren und Forschungsfragen selbstständig wissenschaftlich zu bearbeiten	9 C

Admission requirements: B.AS.101 und B.AS.103	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1-2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Additional notes and regulations: Die Prüfungsvorleistung der regelmäßigen, aktiven Teilnahme impliziert nach § 14 Absatz 5 APO nicht mehr als zwei Fehlsitzungen je Veranstaltung im Semester.

Georg-August-Universität Göttingen **Module B.AS.501: Bachelor Degree Course North American Studies**	3 C 2 WLH

Learning outcome, core skills: Studierende reflektieren und verallgemeinern ihre Kenntnisse und Kompetenzen im Rahmen einer theorie- und methodengestützten Zusammenschau der diachronen und synchronen Parameter des Faches American Studies; sie synthetisieren das im Bachelor-Studium erworbene Wissen zur amerikanistischen Literatur- und Kulturwissenschaft und kommentieren gegenseitig ihre Abschlussprojekte (BA-Arbeiten) und Präsentationen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Kolloquium	2 WLH
Examination: Oral Presentation (approx. 35 minutes), not graded **Examination prerequisites:** regelmäßige aktive Teilnahme am Kolloquium **Examination requirements:** Fundiertes Wissen zum Profil und zur Entwicklung des Faches North American Studies sowie seiner theoretischen und methodologischen Ansätze und Fragestellungen; Fähigkeit, umfassendes Fachwissen strukturiert wiederzugeben und zu diskutieren	3 C

Admission requirements: zwei der Module B.AS.201a-d sowie B.AS.401	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Ara.23: Methods and Theories of Area Studies**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Abschluss dieses Moduls verfügen die Studierenden über Kenntnisse in Methoden und Theorien der Kulturwissenschaften sowohl mit Bezug auf die Arabistik/Islamwissenschaft als auch auf verwandte Disziplinen. Durch Lektüre, Analyse und Diskussion zentraler Theorietexte verfügen sie über Kenntnisse in den Bereichen der Diskursanalyse, der Orientalismusdebatte, der Theorien der Geschlechterforschung sowie der postkolonialen und postmodernen und weiteren Theorien.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Einführung in Methoden und Theorien (Seminar)	2 WLH
Examination: Portfolio (max. 16 pages)	3 C

Examination requirements: Kenntnisse und Darstellung der Methoden und Theorien der Kultur- und Islamwissenschaft in den Bereichen Diskursanalyse, Orientalismusdebatte, Theorien der Geschlechterforschung, postkoloniale, postmoderne Theorien und weitere Theorien.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Irene Schneider
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Additional notes and regulations: Das Portfolio muss ein Umfang von mindestens 14 maximal 16 Seiten vorweisen.

Georg-August-Universität Göttingen **Module B.ES-SK.105: Data Analysis and Statistics**	6 C 4 WLH

Learning outcome, core skills: The students will be trained • to solve problems arising during the handling of scientific data and its analysis • how to avoid common pitfalls already during the design of a study • in various statistical approaches useful for the analysis of different types of data The students will acquire knowledge in the fields of: • data types, attributes, scales and definitions • descriptive, exploratory and confirmatory statistics • statistical analysis and tests of hypotheses	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Data Analysis and Statistics (Lecture) *Contents*: The module will provide the students with a basic understanding of descriptive, exploratory and confirmatory statistics to enable them to understand statistical details in scientific publications, apply statistical methods to their own data and to interpret results from statistical analyses. Furthermore, it will briefly discuss the concepts of statistical predictions and model choice. In addition to the methodological concepts, the lecture will also comprise an introduction to the R language for statistical computing or similar software. The students are confronted with real world examples and have to understand, apply and interpret statistical methodology that finds the encountered problem.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** The students demonstrate their ability to understand, apply and interpret statistical methodology in a statistical analysis. In the exercises, they will solve applied problems and they will independently conduct their own statistical analysis and document the corresponding results in an oral presentation to the group.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. rer. nat. Dominik Seidel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES-SK.110: Computer Science and Mathematics**	6 C 4 WLH

Learning outcome, core skills: Understanding of basic notions and methods of mathematics and computer science, including notations from logic and set theory, relations, graphs, functions, vectors, linear transformations, matrices, eigenvalues, limits, derivatives, extreme values, integration, calculation of areas and volumes, number systems, representation of information, databases, the World Wide Web, foundations of programming, simulation, visualization.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Computer science and mathematics (Lecture) *Contents*: Lecture and Exercise	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Understanding of basic notions and methods of mathematics and computer science as listed above, ability to solve small tasks using these notions and methods.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Kurth
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.101: Forest Botany and Tree Physiology**	6 C 4 WLH

Learning outcome, core skills: This module provides an overview of functional anatomy and physiology of woody plants. The lectures include the introduction to the molecular construction and physiological functions of the cell, the importance of storage substances, the structure of the root as the major organ of water and nutrient uptake, the stem with emphasis on the transport system, the anatomy of leaves with particularities of adaptation to different habitats, as well as the structure and function of the phloem and of dermal tissues. In the exercises, the content of the lectures will be applied to practical examples. The students will be trained in modern microscopic and histochemical techniques. The students learn to draw plant cells and tissues or to document with digital images and to describe their observations objectively.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forest Botany and Tree Physiology (Lecture)	2 WLH
Course: Exercises in Forest Botany (Exercise)	2 WLH
Examination: Written examination (120 minutes) **Examination requirements:** Students demonstrate that they have acquired knowledge of the functional anatomy of the plant body and important biological processes in trees and can reproduce this knowledge.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in biology
Language: English	**Person responsible for module:** Dr. Ines Teichert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.103: Ecological Genetics**	6 C 4 WLH

Learning outcome, core skills: Understanding of the importance of intraspecific (genetic) variation for ecosystem processes and functions, in particular • knowledge of modern methods to assess genetic diversity in diverse groups of organisms • understanding of the role of the evolutionary factors to shape genetic diversity with emphasis on selection • understanding of evolutionary processes including adaptation under natural conditions and in managed ecosystems • understanding of the impact of global change on genetic resources	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecological genetics (Lecture)	2 WLH
Course: Assessment of genetic variation (Practical course) *Contents*: Laboratory course, Workshops	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Use of modern methods to assess genetic variation in diverse groups of organisms, evolutionary factors and how they shape genetic diversity, the role of adaptation under natural or managed conditions, impact of global change	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.104: Chemistry/Physics**	6 C 4 WLH

Learning outcome, core skills: The students gain knowledge of the chemical and physical basics and measurement techniques for studying and understanding ecosystem processes. In chemistry, the topics structure of matter, chemical bonds, state of aggregation, phase transitions, the law of mass action, acid/base and redox reactions and organic chemistry will be covered. In physics, the topics mechanics, thermodynamics, electricity, magnetism and radiative transport will be covered.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Chemistry/Physics	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of chemical and physical principles and measurement methods for understanding processes in ecosystem sciences.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Jens Dyckmans
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.106: Microbiology and Molecular Biology**	6 C 4 WLH

Learning outcome, core skills: Students will be introduced to molecular, biochemical and physiological aspects in microbiology and molecular biology that are important to Ecosystem Sciences. The acquired knowledge allows the students to address questions and problems in Ecology and Systems Biology on molecular levels and understand the background of modern molecular methods that can be applied to solve such topics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Microbiology and biotechnology (Lecture) *Contents*: Microbial organisms in structure, growth, physiology and function, their diversity and roles in ecosystems, diseases and environmental applications are presented	2 WLH
Course: Molecular biology (Lecture) *Contents*: Prokaryotic and eukaryotic genomes and gene structures, encoded function and regulation on all levels, proteins and enzymes, molecular techniques and applications, transgenes are presented.	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Basic knowledge on genetics, cytology, physiology, and ecology of microorganisms (especially bacteria and fungi), applications of microorganism in biotechnology generally and with specific focus on ecological tasks, structure and functions of DNA, RNA, proteins and exemplified metabolites, basic concepts and techniques in molecular biology, recombinant DNA technology, DNA transfer techniques, handling of GMOs.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ursula Kües
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.108: Plant and Animal Ecology**	6 C 4 WLH

Learning outcome, core skills: Students are familiar with basic aut-, population- and synecological concepts in plant and animal ecology from the level of the individuals to entire communities. They have acquired knowledge on succession of plant communities after disturbance, the role of plants in carbon, water and nutrient cycling and on key plant interactions. Students know the animal tree of life and understand the functional differentiation among animal taxa. Students are familiar with the functional roles of animals in multitrophic communities as well as with the underlying environmental factors, population-based processes and biotic interactions that structure these communities. Students are able to apply ecological field methods and to perform basic analyses of diversity, ecological functions and community structure.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Plant ecology (Lecture)	2 WLH
Course: Animal ecology (Lecture) *Contents*: Lecture and exercises	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** • Understanding concepts and methods in plant and animal aut-, population-, and synecology • Knowledge of role of plants in carbon, water and nutrient cycling and interactions • Knowledge of major animal taxa, their biodiversity and their functional role in ecosystems	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Andreas Schuldt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.109: Terrestrial Biogeochemistry**	6 C 4 WLH

Learning outcome, core skills: • Understanding the role of the pedosphere as the interface of biosphere, lithosphere, hydrosphere, and atmosphere on these major element cycles • Advancing knowledge on the major biogeochemical processes of C, N and P cycles • Understanding the anthropogenic changes on these biogeochemical cycles and the mitigation practices • Learning how to assess anthropogenic influences by comparative biogeochemistry of natural and managed ecosystems • Understanding the principles and calculations of indices of soil fertility and nutrient cycling rates	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Terrestrial biogeochemistry *Contents*: Lecture, Calculation exercises	4 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** Submission of calculation exercises (max. 5 pages) **Examination requirements:** Participation in all calculation exercises, and interactive discussions on interpretation of measured properties and processes. Examination: C, N and P cycles of terrestrial ecosystems, tools for quantifying biogeochemical cycling, soil biochemical reactions, calculations of process rates and turnover time; and scientific writing of a topic within terrestrial biogeochemistry.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Marife Corre
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.111: Forest Pathology**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Recognition of forest damages and choosing the right control method are the basic skills of a forester. This course provides the student with an understanding of the most important bacterial and fungal diseases and how they are controlled in forest ecosystem. The student will know the most important abiotic environmental factors affecting forest systems, recognize the most important fungal diseases and understands their impact to forest trees, as well as understands the epidemiology of these diseases. The student also understands other than pathogenic interactions between microbes and forest trees.	Attendance time: 56 h Self-study time: 124 h

Course: Forest pathology (Lecture) *Contents*: Students are introduced into pathogenic bacteria and fungi, obligate and opportunistic organisms, changes in lifestyles, effects on hosts, effects of diseases onto the forest ecosystem, classical and modern approaches to defeat, how to approach novel diseases and develop possible measures for protection.	2 WLH
Course: Exercises in forest pathology (Lecture) *Contents*: Students will learn in excursions into nature the diversity of disease symptoms on leaves, bark, stems, roots, wood, shall collect material of interest for own analysis in the lab (microscopy, isolation, definition of disease) and report to the other students their findings. Short lectures combined with practical experiences in nature and within the laboratory.	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of the most important abiotic environmental factors affecting forest Systems; recognition of the most important fungal and possibly bacterial diseases; control methods; understanding how different damages affect individual tree and at the forest level, the epidemiology of different diseases, interactions with other calamities and between microbes other than pathogenic, and forest trees.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Chhana Ullah
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.113: Ecosystem Management and Conservation**	6 C 4 WLH

Learning outcome, core skills: The course imparts knowledge about the sustainable management of forest ecosystems and about nature conservation. Based on some fundamentals of forest ecology such as the impact of competitive interactions between trees, options of stand management are presented. Mixed stands and their management are of special importance. The course will provide information on how to analyze forest stands and how to derive appropriate silvicultural treatments in order to achieve the goals set by a given forest owner. The nature conservation part will introduce priority goals of conservation biology, the major threats to natural ecosystems and how they can be managed. The use of molecular methods is commonplace in conservation at various levels of biological organization from genes to ecosystems. Students will examine the results of molecular approaches in biodiversity conservation based on selected projects and recent literature. Students will be able to critically evaluate benefits and limitations of molecular studies in a conservation context. Examples will be taken from different geographic and climatic regions.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forest ecosystem management (Lecture)	2 WLH
Course: Conservation of biodiversity based on molecular tools (Lecture) *Contents*: Lecture and practical exercises	2 WLH
Examination: Written examination (120 minutes) **Examination requirements:** Competition in plant communities, plant – environment interactions, mixed stands, principles of stand management, silvicultural systems, human land-use, climate change, biodiversity, ecosystem functioning. Effective comprehension of scientific literature with regard to conservation of biodiversity, different methods used for conservation of biodiversity and their specific applications, critical evaluation of molecular studies in a conservation context.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.114: Ecological Climatology**	6 C 4 WLH

Learning outcome, core skills: In this course students will gain insights in the main atmospheric characteristics and how they influence ecosystem processes and fluxes between ecosystem compounds (e.g. air, plants, soil). They will also learn how ecosystems feed back to the atmosphere at local and global scale. This will form the basis for understanding the impact of climate change on ecosystem functions and services. The lecture course will give an overview on atmospheric variables such as radiation, humidity, temperature, and wind and their interactions with terrestrial ecosystems. In the seminar/exercise class, the understanding will be deepened by quantitative exercises. The students will be trained in quantitative and qualitative scientific methods to describe climate-dependent physical, chemical and biological processes in terrestrial ecosystems enabling them to understand and evaluate the current discussion on climate change and its impact on terrestrial ecosystems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecological climatology (Lecture) *Contents*: Lecture, Seminar and Exercise	4 WLH
Examination: Oral examination (approx. 20) **Examination requirements:** Qualitative and quantitative description of radiation, humidity, temperature, wind, their interactions with terrestrial ecosystems, carbon and water cycle, atmospheric chemistry, climate change, climate modelling.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Nils Knohl
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.115: Ecological Modelling**	6 C 4 WLH

Learning outcome, core skills: Comprehensive knowledge of ecological models, theories and concepts. Development of interdisciplinary analytical thinking. Critical analysis and evaluation of the chances and limitations of different modelling approaches.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecological modelling (Lecture) *Contents*: Theoretical foundations and classical and modern models of terrestrial ecology. Application and analysis of classical and modern ecological models and concepts. Lecture and tutorial.	4 WLH
Examination: Oral Presentation (approx. 10 minutes) **Examination prerequisites:** Written examination (30 minutes); ungraded **Examination requirements:** Comprehensive knowledge of ecological models, theories and concepts. Interdisciplinary analytical thinking skills. Ability to critically analyze and evaluate the chances and limitations of different modelling approaches.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Katrin Mareike Meyer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.116: Chemical and Microbiological Methods**	6 C 4 WLH

Learning outcome, core skills: In order to understand the biotic and abiotic interactions, roles and the growth of living organisms in the ecosystem, their various physical/chemical structures will be examined with various analytical methods in lab. Various analytical methods for the understanding will be used, e.g. the formation of compounds within the tree trunk, the biosynthesis of extractives, isolation of microorganisms and of DNA, protein techniques, microscopy, and so on. Objective of the course: The purpose of the course is to learn and get hand-on experience with analytical methods and handling of biological material in details.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Chemical and mechanical analysis (Practical course) *Contents*: Introduction to various analytical methods, e.g. gravimetric, spectroscopic, thermal and mechanical, and other analytical methods for practical experiment on selected relevant samples.	2 WLH
Course: Microbiological and molecular methods (Practical course) *Contents*: Introduction to microbial isolation and cultivation techniques, DNA isolation, PCR, protein tests, gel-electrophoresis, microscopy on selected relevant samples.	2 WLH
Examination: Protocol (max. 20 pages; 50%) and term paper (max. 20 pages; 50%) **Examination requirements:** Principles of diverse analytical methods, hand-on application	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. rer. nat. Kai Zhang
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.117: Physiological and Genetic Methods**	6 C 4 WLH

Learning outcome, core skills: Genetic methods: Students will learn to investigate the dynamics of intraspecific diversity in different types of ecosystems. This involves field sampling of important plants, DNA extraction from different tissues, laboratory analyses with various types of molecular markers, data analyses and interpretation. Students will learn practical steps to assess genetic diversity, and will be able to evaluate the use of DNA-based methods for applications in breeding, conservation, and ecosystem management. Physiological methods: Students will learn how to measure physiological parameters on living trees using different devices, how to organize sampling and to use quantitative laboratory methods for the evaluation of physiological parameters. This involves handling and preparation of samples, calibration and use of standards, performance and documentation of biochemical assays, measuring physiological parameters, assessment of results and teamwork to resolve experimental problems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: DNA-Based Methods to Study Biodiversity (Practical course) *Contents*: Workshops, laboratory exercise	2 WLH
Course: Quantitative Methods to Study Tree Physiology (Practical course) *Contents*: Workshops, laboratory exercise	2 WLH
Examination: Lab Report (max. 15 pages) **Examination requirements:** Knowledge about DNA markers and techniques, estimation of intraspecific diversity in different types of ecosystems, methods used for experimental sampling, DNA extraction from different tissues, quantitative photometry, biochemical assays, laboratory techniques, data analyses and interpretation and application of results.	6 C

Admission requirements: none	**Recommended previous knowledge:** Forest Botany and Tree Physiology; Ecosystem management and Conservation; Ecological Genetics
Language: English	**Person responsible for module:** Dr. Ines Teichert
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 4

Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.119: Field Methods in Forest Ecology, Silviculture and Vegetation Science**	6 C 4 WLH

Learning outcome, core skills: • Understanding the design of field trials in forest ecology, silviculture and vegetation science • Understanding how to investigate links between vegetation, site conditions and management • Learning how to measure, analyze and interpret basic forest structural attributes • Learning how to conduct, analyze and interpret vegetation relevés • From this field practical, students will learn how to design field studies, collect relevant data, analyze it statistically and report on it in a scientific report	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Field methods in forest ecology, silviculture (Exercise) *Contents*: Exercises and lectures	2 WLH
Course: Field methods in vegetation science (Exercise) *Contents*: Exercises and lectures	2 WLH
Examination: Term Paper (max. 15 pages) **Examination requirements:** Knowledge about the design and implementation of a field study and the statistical analysis, interpretation, and discussion of data. The term paper follows the structure of a scientific report.	6 C

Admission requirements: none	**Recommended previous knowledge:** Plant Diversity Plant & Animal Ecology Ecosystem Management & Conservation
Language: English	**Person responsible for module:** Prof. Dr. Holger Kreft
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.120: Scientific Writing**	6 C 4 WLH

Learning outcome, core skills: • Writing well-structured scientific texts • Using appropriate language for scientific texts • Knowing the production process of scientific papers including good scientific practice	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Scientific Writing (Course) *Contents*: • How to structure scientific texts into commonly used sections (Title, Abstract, Introduction, Methods, Results, Discussion, References, Acknowledgements) • How to improve readability via structure at the sentence and paragraph levels as well as effective wording • How to report results in text, tables and figures • How to write scientific texts in practice: General advice and best practice examples for writing scientific texts, which will be directly applied to developing and improving the texts of the participants • Scientific writing as a collaborative and iterative process: Giving and receiving feedback, proof reading and editing • Addressing language issues in own scientific writing • How to efficiently read scientific texts and assess the quality of scientific outlets • When, what and how to cite in scientific texts • How to write research proposals • How to design scientific posters • Good scientific practice: Dos and Don’ts in scientific cooperation, publication and peer review This module should be done in parallel to or after the modules of the fourth semester.	4 WLH
Examination: Presentation (approx. 5 minutes) with written outline (max. 1 page) **Examination prerequisites:** Term paper (max. 15 pages); ungraded **Examination requirements:** Demonstration of the ability to structure and write clear scientific texts in the English language. Examination: Presentation (approx. 5 minutes) with handout in form of a scientific poster (1 page). Examination prerequisites: will be a written term paper in the form of a research proposal (max. 15 pages) completed in class and outside class.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand

Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.122: Global Change**	6 C 4 WLH

Learning outcome, core skills: At the end of this course the students are expected to • have insight in the major components of the earth system and how they are connected, • understand how environmental processes and biogeochemical cycles are regulated by biosphere-hydrosphere-atmosphere feedbacks and how they are affected by global change through natural and anthropogenic processes, • be able to understand and evaluate simple biogeochmical models.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Global change (Lecture) *Contents*: Lecture, Modelling exercises, Seminar	4 WLH
Examination: Presentation (approx. 15 minutes; 50%) with written outline (max. 8 pages; 50%) **Examination requirements:** Knowledge about major global biogeochemical cycles, their components, fluxes and their interconnection; calculation/modelling exercises, statistical analysis, interactive discussions on interpretation of global biogeochemical cycles, being able to demonstrate scientific presentation and writing.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Edzo Veldkamp
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 6
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.701: Resource Assessment in Ecosystems**	6 C 4 WLH

Learning outcome, core skills: **The students will be trained** • to identify different types of resources in terrestrial ecosystems and forests in particular, • how to assess those resources (abundance, quality, etc.), • and how to design and conduct a scientifically sound study that aims at assessing an exemplary resource. **The students will acquire knowledge in the fields of:** • ecosystem assessment, resource identification • sampling approaches and measurement techniques • statistical analysis and scientific reporting of results • systemic approaches to ecosystems, incl. cybernetics and thermodynamics in biology	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Resource assessment in ecosystems (Lecture) *Contents*: The lecture will introduce various types of resources and present differences in their provision by different terrestrial ecosystems. Examples from several spatial scales will be used to create an understanding of possible challenges and scientific methods during resource assessment. Sampling techniques and instruments will be presented, quality and consistency of datasets will be addressed and statistical analysis techniques we be introduced. Basic principles of scientific reporting will be presented based on the datasets obtained from the laboratory course. System theory, cybernetics and holistic ecosystem approaches and thermodynamics in ecosystems will be introduced.	2 WLH
Course: Resource assessment in ecosystems (Practical course) *Contents*: During the lab course the students will plan, conduct and evaluate the assessment of exemplary resources. They will learn how to perform a scientifically sound study, beginning at an initial idea and ending with the evaluation of the results. During this process the students will learn to design a study under consideration of its feasibility, potential outcome, financial and technical restrictions, legal issues, statistical limitations, as well as ethics and practical knowledge when it comes to publishing the results.	2 WLH
Examination: Written examination (120 minutes) **Examination requirements:** Knowledge of resource types, definitions, basic statistics, sampling designs, data quality control, factors that need to be considered in study planning, basic principles of scientific reporting, basic knowledge in cybernetics, system theory, thermodynamics in ecosystems.	6 C

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Prof. Dr. rer. nat. Dominik Seidel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 5
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.ES.702: Special Topics in Plant Ecophysiological Methods and Applications**	6 C 4 WLH

Learning outcome, core skills: Students will get advanced knowledge of scientific methods and procedures. They will acquire practical skills by active participation in a research project conducted under supervision. The students can choose one among several projects. They learn to develop the research question by literature research and discussion with the supervisor. They decide on the appropriate methods (e.g. field analyses, sterile multiplication and cultivation of plants for controlled experiments, tissue culture, application of stresses, analyses of plant responses by various analytical tools). The students will learn to collect, arrange and analyze relevant scientific data. They will learn how to interpret and present these results.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Plant Methods and Ecophysiological Applications (Practical course)	4 WLH
Examination: Term Paper (max. 20 pages) **Examination requirements:** Scientific hypotheses, experimental design, laboratory techniques, analysis, interpretation and scientific interpretation of research results	6 C

Admission requirements: none	**Recommended previous knowledge:** Successful completion of the course “Forest Botany and Tree Physiology”
Language: German, English	**Person responsible for module:** Dr. Ines Teichert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 5
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module B.ES.703: Intraspecific Diversity of Plants**	6 C 4 WLH

Learning outcome, core skills: Students will learn to investigate the dynamics of intraspecific diversity in different types of ecosystems. This involves field sampling of important plants, DNA extraction from different tissues, laboratory analyses with various types of molecular markers, data analyses and interpretation. Students will learn practical steps to assess genetic diversity, and will be able to evaluate the use of DNA-based methods for applications in breeding, conservation, and ecosystem management.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Intraspecific diversity of plants (Lecture)	1 WLH
Course: DNA based methods to study biodiversity (Practical course) *Contents*: Workshops, laboratory exercise	3 WLH
Examination: Term Paper (max. 20 pages) **Examination requirements:** DNA markers and techniques, estimation of intraspecific diversity in different types of ecosystems, methods used for experimental sampling, DNA extraction from different tissues, laboratory techniques, data analyses and interpretation and application of results.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 5
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.704: Research Practicum**	6 C 4 WLH

Learning outcome, core skills: Students have a possibility to participate in a research work at an institution of their choice (also abroad) to learn new scientific methods and get additional experiences about variety of research topics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Research practicum (Practical course)	3 WLH
Course: Research practicum (Seminar)	1 WLH
Examination: Term Paper (max. 20 pages) **Examination requirements:** Laboratory methods, analysis, interpretation and scientific presentation of research results. In case of abroad practicum: a confirmation letter from the supervisor with a grade (if possible, in the German grade system)	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 5
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.ES.707: System Science and Knowledge Transfer**	6 C 4 WLH

Learning outcome, core skills: In this module, students acquire the ability to analyse forestry issues using the systems approach and transfer the scientific results to policy and practice.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Systems Thinking and Systems Dynamics (Lecture) *Contents*: Lecture, Exercise by integrated case study. System thinking is analysing socio-ecological systems by looking for emergent behaviour from interacting components (holistic approach). Students become familiar with cause-effect relationships and feedback systems and conduct a case study.	2 WLH
Course: Management of research and knowledge transfer (Lecture) *Contents*: Lecture, Exercise by integrated case study. Multidisciplinary management techniques are shown for linking system modelling with different disciplines. In addition transdisciplinary management based on the RIU model approach is applied to transfer the scientific information into policy and practice. The integrated case study is linking both parts of the module.	2 WLH
Examination: Oral presentation (15 minutes, 50%) and term paper (max. 10 pages 50%) **Examination requirements:** Understanding the basic concepts of Systems Thinking, modelling dynamical systems using causal-loop-diagrams, application of the gained knowledge to a real world system. Basic knowledge in management of inter- and transdisciplinary research and in transfer of scientific information into practice.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Ronald Bialozyt
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Eng.101: Basic Skills: Linguistics, Literature and Culture**	6 C 4 WLH
Learning outcome, core skills: Nach erfolgreichem Abschluss des Moduls • verfügen Studierende über grundlegende Methoden der Literatur- und Kulturwissenschaft sowie der Sprachwissenschaft insbesondere im Hinblick auf die Strukturierung von Informationen und zum Aufbau von Analogien sowie zur Herstellung grundlegender Vernetzungen; • verfügen Studierende über zentrale literatur- und kulturwissenschaftliche sowie sprachwissenschaftliche Arbeitsabläufe; • kennen Studierende verschiedene Lösungsstrategien für literatur- und kulturwissenschaftliche sowie sprachwissenschaftliche Fragestellungen, können sie begründet auswählen und erfolgreich anwenden; • verfügen Studierende über grundlegende Kenntnisse im Bereich des wissenschaftlichen Arbeitens sowohl im Bereich der Literatur- und Kulturwissenschaft als auch in der Sprachwissenschaft.	**Workload:** Attendance time: 56 h Self-study time: 124 h
Course: Teilmodul 1: Grundlagen der Literatur- und Kulturwissenschaft (A) *Contents*: Einführungs-Proseminar "Introduction to the Study of British Literature and Culture" Einführung in die grundlegende Terminologie, in Konzepte und Methoden des Faches "English: Language, Literatures and Cultures/Englisch" vornehmlich in seiner literaturwissenschaftlichen Ausrichtung (z.B. Aspekte der Sprachverwendung, Erzähltechnik, Literaturtheorie, Figurencharakterisierung). Einübung von Techniken der literaturwissenschaftlichen Analyse. Hinweis: Teilmodul 1 (A) ist zu wählen, wenn das Fach English: Language, Literatures and Cultures mit dem Fach North American Studies kombiniert wird. Vgl. auch oben den Hinweis zur Kombinierbarkeit von Fächern.	2 WLH
Course: Teilmodul 1: Grundlagen der Literatur- und Kulturwissenschaft (B) *Contents*: Einführungs-Proseminar "Introduction to the Study of American Literature and Culture” Einführung in die grundlegende Terminologie, in Konzepte und Methoden des Faches "English: Language, Literatures and Cultures/Englisch" in seiner literatur- und kulturwissenschaftlichen Ausrichtung (z.B. Gattungstheorien, Strukturmerkmale, Stilistik, Erzähltechnik, Literaturtheorie, Figurencharakterisierung). Einübung von Techniken des wissenschaftlichen Arbeitens (z.B. Aufbau und Abfassung von wissenschaftlichen Texten; Kritikfähigkeit gegenüber Texten). Förderung eines Verständnisses von der Einheit des Fachs über die differenzierten Teilbereiche hinaus. Prüfungsvorleistungen: regelmäßige Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen; mündliche Leistung (Referat/Präsentation ca. 15 min.), ggf. 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (Insg. max. 750 Wörter)	2 WLH
Examination: Written examination (90 minutes), not graded	3 C

Examination prerequisites: Keine. Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. **Examination requirements:** Grundlagen der Textanalyse; Grundbegriffe und Grundlagentechniken der Literaturwissenschaft, beides basierend auf den im Kurs verwendeten Materialien und Herangehensweisen	

Course: Teilmodul 2: Grundlagen der Sprachwissenschaft *Contents*: Einführungs-Proseminar "Introduction to English Linguistics": Einführung in die Grundfragestellungen des Faches Linguistik als empirische, deskriptive und theoretische Wissenschaft. Die wissenschaftliche Erforschung der gegenwärtigen und historischen Erscheinungsformen des Englischen wird exemplarisch auf der Ebene der Phonologie, der Morphologie, der Lexikologie, der Syntax und der Semantik vorgestellt und eingeübt. Um den Gebrauch der Sprache adäquat erfassen zu können, wird in die interdisziplinären Ansätze und Methoden der Sozio-, Pragma- und Psycholinguistik eingeführt. Ziel dieses Teilmoduls ist die Vorbereitung auf Lehrveranstaltungen sowohl im Bereich der modernen Linguistik als auch im Bereich der historischen Linguistik/ Mediävistik.	2 WLH
Examination: Klausur (90 Min) oder klausurähnliche Hausarbeit (max 2000 Wörter), not graded **Examination prerequisites:** Keine. Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. **Examination requirements:** Die Studierenden weisen in der Teilmodulprüfung nach, dass sie die Grundbegriffe der linguistischen Kerndisziplinen kennen und die zentralen Methoden sprachwissenschaftlicher Analyse anwenden können. Sie weisen des weiteren Überblickskenntnisse zur Sprachgeschichte nach und können diese anhand von geeigneten Beispielen illustrieren. Sie weisen außerdem nach, dass sie in der Lage sind, sprachliche Datensätze zu beschreiben, Muster bezüglich sprachlich relevanter Kategorien und Prozesse zu erkennen und erste Generalisierungen zu formulieren.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Eng.201: Foundations of English: English Grammar and Academic Writing Practice**	5 C 3 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Grammatikalische Eigenheiten des Englischen zu erkennen und diese Erkenntnisse regelgeleitet und kontextsensitiv auf neue Situationen zu transferieren; • Grundlagen des akademischen Schreibens zu verstehen und bei der Erstellung von Texten anzuwenden	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: English Grammar *Contents*: Kernbereiche praktischer englischer Grammatik (z.B. Technical Terminology, Tense/ Aspect, Determiners, Prepositions, Collocations)	2 WLH
Examination: Written examination (60 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Academic Writing Practice *Contents*: Grundlegende Methoden und Techniken des effektiven wissenschaftlichen Schreibens (z.B. Aspects of Linguistic Accuracy, Register, Style)	1 WLH
Examination: Portfolio (max. 2000 words), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Examination requirements: Die Studierenden: • Sind mit den grammatikalischen Kerneigenschaften des Englischen vertraut und können ihr Wissen auf neue Situationen anwenden • Sind mit den wesentlichen Aspekten und Anforderungen schriftlicher Arbeiten im universitären Kontext vertraut, insbesondere mit den Anforderungen des Seminars für Englische Philologie	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Additional notes and regulations:
Max. Anzahl Studierender: Grammar: 65; Academic Writing: 15.

Georg-August-Universität Göttingen **Module B.Eng.202: Foundations of English: Oral Competence**	5 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • in kommunikativen Standardsituationen mit einer möglichst natürlichen Aussprache frei, korrekt und pragmatisch angemessen zu sprechen; • Aussprachepobleme mithilfe phonetischer Kenntnisse kontrastiv zu analysieren, darzustellen und zu begründen.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Phonetics *Contents*: Theoretische Fundierung der korrekten Aussprache des Englischen	2 WLH
Examination: Written examination (60 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Oral Practice and Pronunciation *Contents*: • Konsistent korrekte Aussprache des Englischen • Fortgeschrittene Gesprächskompetenz (z.B. talk, vocabulary, conversation)	2 WLH
Examination: Oral examination (approx. 20 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Examination requirements: Die Studierenden: • Kennen phonetische Unterschiede zwischen Ausgangs- und Zielsprache und können diese Kenntnisse und Fertigkeiten aktiv anwenden und in eine korrekte Aussprache umsetzen	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra Dr. S. Canpolat
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Additional notes and regulations: Max. Anzahl Studierender: Oral Practice and Pronunciation: 15; Phonetics: 80

Georg-August-Universität Göttingen **Module B.Eng.203: Writing for Professional Purposes, Culture and Vocabulary**	8 C 6 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • sich mittels unterschiedlicher Lernstrategien ein neues Vokabular aus verschiedenen thematischen Bereichen anzueignen und dies aktiv schriftlich und mündlich anzuwenden; • zentrale Eigenschaften und Besonderheiten des kulturellen Lebens und der Institutionen im gewählten englischsprachigen Raum zu benennen und zu beschreiben, analytisch zu begründen und zu interpretieren; • schriftliche Texte wie z.B. Lebensläufe, Bewerbungsschreiben und Geschäftsbriefe in einem professionellen Kontext zu verfassen, die den kulturellen, stilistischen und lexikalischen Normen der anglo-amerikanischen Arbeitswelt entsprechen.	**Workload:** Attendance time: 84 h Self-study time: 156 h

Course: Writing for Professional Purposes Die benotete Prüfungsleistung wird im Kurs Writing for Professional Purposes abgelegt. Das Portfolio (max. 2500 Wörter) besteht aus einer Reihe von schriftlichen Aufgaben und Übungen, die während des Semesters in den Kurssitzungen oder zu Hause angefertigt werden.	2 WLH

Course: American Culture and Institutions (Beginner's Course) or British Culture and Institutions (Beginner's Course) or Irish Culture and Institutions (Beginner's Course) Für diesen Kurs sowie den Vocabulary Course ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem) oder reichen ein Portfolio (max. 2500 Wörter) ein. Dieser Kurs sowie der Vocabulary Course sind *keine* Prüfungsvorleistungen für den Kurs Writing for Professional Purposes. Es bietet sich inhaltlich jedoch an, diese Kurse vorher zu besuchen.	2 WLH

Course: Vocabulary Training Für den Institutions-Kurs sowie den Vocabulary Course ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem). Der Institutions-Kurs sowie der Vocabulary Course sind *keine* Prüfungsvorleistungen für den Kurs Writing for Professional Purposes. Es bietet sich inhaltlich jedoch an, diese Kurse vorher zu besuchen.	2 WLH

Examination: Portfolio (max. 2500 words) **Examination prerequisites:** In allen LV jeweils regelmäßige Teilnahme	8 C

Examination requirements: • Die Studierenden haben unter Einsatz der vermittelten Lernstrategien ein Vokabular erworben, das sie in die Lage versetzt, alltägliche und anspruchsvollere Texte normengerecht zu lexikalisieren. • Die Studierenden haben die sprachlichen Fertigkeiten und kulturellen Kenntnisse erworben, um schriftliche Korrespondenz normengerecht zu verfassen. • Die Studierenden sind mit den Gegebenheiten des von ihnen gewählten englischsprachigen Raumes vertraut und können ihre Kenntnisse in der geforderten Textproduktion einsetzen.	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Seda Canpolat
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Maximale Studierendenzahl: American/British Institutions Course: unbegrenzt; Irish Institutions: 30; Writing for Professional Purposes: 25; Vocabulary Training: 25

Georg-August-Universität Göttingen **Module B.Eng.204: Translation, Culture and Vocabulary**	8 C 6 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Standardsituationen im alltäglichen Bereich und formalere Kontexte im akademischen und nicht-akademischen Bereich lexikalisch korrekt, stilistisch angemessen und landeskundlich kompetent zu meistern • Schriftliche und mündliche Texte unterschiedlicher Thematik, Register und Stilebenen unter Zuhilfenahme zielführender Techniken zu verstehen • zentrale Eigenschaften und Besonderheiten des kulturellen Lebens und der Institutionen im gewählten englischsprachigen Raum zu benennen und zu beschreiben, analytisch zu begründen und zu interpretieren • Texte unterschiedlicher landeskundlicher Thematik, Register und Stilebenen angemessen vom Deutschen ins Englische zu übersetzen	**Workload:** Attendance time: 84 h Self-study time: 156 h

Course: Translation German into English Die benotete Prüfungsleistung wird im Translation Course abgelegt.	2 WLH

Course: American Culture and Institutions (Beginner's Course) or British Culture and Institutions (Beginner's Course) or Irish Culture and Institutions (Beginner's Course) Für den Culture and Institutions-Kurs sowie den Vocabulary Course bzw. Listening/ Reading Comprehension Course ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem) oder reichen ein Portfolio (max. 2500 Wörter) ein. Der Institutions-Kurs sowie der Vocabulary Course sind *keine* Prüfungsvorleistungen für den Translation Course. Es bietet sich inhaltlich jedoch an, diese Kurse vorher zu besuchen.	2 WLH

Course: Vocabulary Training Course Für den Culture and Institutions-Kurs sowie den Vocabulary Course bzw. Listening/ Reading Comprehension Course ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem). Der Institutions-Kurs sowie der Vocabulary Course sind *keine* Prüfungsvorleistungen für den Translation Course. Es bietet sich inhaltlich jedoch an, diese Kurse vorher zu besuchen.	2 WLH

Examination: Written examination (90 minutes)	8 C

Examination prerequisites: In allen LV jeweils regelmäßige Teilnahme	

Examination requirements: • Die Studierenden haben unter Einsatz der vermittelten Lernstrategien ein Vokabular erworben, das sie in die Lage versetzt, alltägliche und landeskundlich anspruchsvollere Texte normengerecht zu lexikalisieren • Die Studierenden können erlernte Techniken einsetzen, um unbekannte schriftliche und mündliche Texte zu verstehen • Die Studierenden haben die sprachlichen Fertigkeiten und landeskundlichen Kenntnisse erworben, um einen deutschen Text normengerecht ins Englische zu übersetzen	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Maximale Studierendenzahl: American/British Institutions Course: unbegrenzt; Irish Institutions: 30; German-English Translation: 25; Vocabulary Training: 25

Georg-August-Universität Göttingen **Module B.Eng.205: Writing for Professional Purposes**	5 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • zentrale Eigenschaften und Besonderheiten des kulturellen Lebens und der Institutionen im gewählten englischsprachigen Raum zu benennen und zu beschreiben, analytisch zu begründen und zu interpretieren; • schriftliche Texte wie z.B. Lebensläufe, Bewerbungsschreiben und Geschäftsbriefe in einem professionellen Kontext zu verfassen, die den kulturellen, stilistischen und lexikalischen Normen der anglo-amerikanischen Arbeitswelt entsprechen.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Writing for Professional Purposes Die benotete Prüfungsleistung wird im Kurs Writing for Professional Purposes abgelegt. Das Portfolio (max. 2500 Wörter) besteht aus einer Reihe von schriftlichen Aufgaben und Übungen, die während des Semesters in den Kurssitzungen oder zu Hause angefertigt werden.	2 WLH

Course: American Culture and Institutions (Beginner's Course) or British Culture and Institutions (Beginner's Course) or Irish Culture and Institutions (Beginner's Course) Für den Kurs ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem) oder reichen ein Portfolio (max. 2500 Wörter) ein. Der Kurs ist keine Prüfungsvorleistung für Kurs Writing for Professional Purposes. Es bietet sich inhaltlich jedoch an, diesen Kurs vorher zu besuchen.	2 WLH

Examination: Portfolio (max. 2500 words) **Examination prerequisites:** In beiden LV jeweils regelmäßige Teilnahme	5 C

Examination requirements: • Die Studierenden sind mit den Gegebenheiten des von ihnen gewählten englischsprachigen Raumes vertraut und können ihre Kenntnisse in der geforderten Textproduktion einsetzen. • Die Studierenden haben die sprachlichen Fertigkeiten und kulturellen Kenntnisse erworben, um englischsprachige Korrespondenz normengerecht zu verfassen.	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Seda Canpolat
Course frequency:	**Duration:**

each semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Max. Studierendenzahl: American/British Institutions Course: unbegrenzt; Introduction to Irish Institutions: 30; Writing for Professional Purposes: 25

Georg-August-Universität Göttingen **Module B.Eng.206: Translation and Culture**	5 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • zentrale Eigenschaften und Besonderheiten des kulturellen Lebens und der Institutionen im gewählten englischsprachigen Raum zu benennen und zu beschreiben, analytisch zu begründen und zu interpretieren • Texte unterschiedlicher landeskundlicher Thematik, Register und Stilebenen angemessen vom Deutschen ins Englische zu übersetzen	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Translation German into English Die benotete Prüfungsleistung wird im Translation Course abgelegt.	2 WLH

Course: American Culture and Institutions (Beginner's Course) or British Culture and Institutions (Beginner's Course) or Irish Culture and Institutions (Beginner's Course) Für den Culture and Institutions-Kurs ist in FlexNow eine "qualifizierte Teilnahme" nachzuweisen. Studierende nehmen "qualifiziert" teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem) oder reichen ein Portfolio (max. 2500 Wörter) ein. Der Kurs ist keine Prüfungsvorleistung für den Translation Course. Es bietet sich inhaltlich jedoch an, diesen Kurs vorher zu besuchen.	2 WLH

Examination: Written examination (90 minutes) **Examination prerequisites:** In beiden LV jeweils regelmäßige Teilnahme	5 C

Examination requirements: • Die Studierenden sind mit den landeskundlichen Gegebenheiten des von ihnen gewählten englischsprachigen Raumes vertraut und können diese Kenntnisse in eine kulturell adäquate Übersetzung einfließen lassen • Die Studierenden verfügen über die notwendigen Fertigkeiten, auch anspruchsvollere deutsche Texte grammatikalisch, lexikalisch und stilistisch korrekt ins Englische zu übersetzen	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Max. Studierendenzahl: American/British Institutions Course: unbegrenzt; Irish Institutions: 30; Translation: 25

Georg-August-Universität Göttingen **Module B.Eng.207: Translation and Vocabulary**	5 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Standardsituationen im alltäglichen Bereich und formalere Kontexte im akademischen und nicht-akademischen Bereich lexikalisch erfolgreich, stilistisch angemessen und landeskundlich kompetent zu meistern • Texte unterschiedlicher Thematik, Register und Stilebenen angemessen vom Englischen ins Deutsche zu übersetzen • Eigenschaften und Besonderheiten von Kultur und Institutionen im englischsprachigen Raum zu benennen und zu beschreiben, analytisch zu begründen und zu interpretieren	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Translation German into English Die benotete Prüfungsleistung wird im Translation Course abgelegt.	2 WLH

Course: Vocabulary Training Für den Kurs Vocabulary Training ist in FlexNow eine „qualifizierte Teilnahme“ nachzuweisen. Studierende nehmen teil, indem sie mindestens zwei von vier semesterbegleitend angebotenen "quizzes" (je ca. 15 Min.) bestehen. Alternativ halten sie in Gruppen von 3-4 Studierenden eine Gruppenpräsentation von 45-60min Dauer (15 Min. pro Studierender/Studierendem). Das Vocabulary Training ist keine Prüfungsvorleistung für den Translation Course. Es bietet sich inhaltlich jedoch an, diesen Kurs vorher oder parallel zu besuchen.	2 WLH

Examination: Written examination (90 minutes) **Examination prerequisites:** In beiden LV jeweils regelmäßige Teilnahme	5 C

Examination requirements: Die Studierenden haben unter Einsatz der vermittelten Lernstrategien ein Vokabular erworben, das sie in die Lage versetzt, Texte unterschiedlicher Provenienz, lexikalisch adäquat zu erfassen. Sie verfügen über die notwendigen Fertigkeiten, auch anspruchsvollere deutsche Texte grammatikalisch, lexikalisch und stilistisch korrekt ins Englische zu übersetzen.	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students:	

not limited	

Additional notes and regulations:
Max. Studierendenzahl: Vocabulary Training: 35; Translation: 25

Georg-August-Universität Göttingen **Module B.Eng.208: Writing for Professional Purposes**	3 C 2 WLH

Learning outcome, core skills: Studierende sind in der Lage schriftliche Texte, wie z.B. Lebensläufe, Bewerbungsscheiben und Geschäftsbriefe, in einem professionellen Kontext zu verfassen, die den kulturellen, stilistischen und lexikalischen Normen der anglo-amerikanischen Arbeitswelt entsprechen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lehrveranstaltung Writing for Professional Purposes *Contents*: Einführung in das Verfassen professioneller Korrespondenz wie z. B. Lebensläufen, Bewerbungsschreiben und Geschäftsbriefen.	2 WLH
Examination: Portfolio (max. 2500 words) **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: Die Studierenden haben die notwendigen sprachlichen Fertigkeiten und kulturellen Kenntnisse, um englischsprachige Korrespondenz normengerecht zu verfassen.	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Seda Canpolat
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module B.Eng.231: Advanced English Language Skills (Style and Vocabulary)**	6 C 2 WLH

Learning outcome, core skills: Studierende verfügen über vertiefte Methodenkompetenzen vor allem im Hinblick auf Stilistik und Wortschatz insbesondere mit Blick auf die Erstellung einer fremdsprachlich abgefassten Bachelor-Arbeit. Sie vertiefen soziale und kommunikative Kompetenzen (Sprachmittlerkompetenzen) durch Erarbeitung und Abrundung hierfür relevanter fortgeschrittener (Teil-)Fertigkeiten und Inhalte (Sprachbeherrschung, Wortschatz, Hör- und Leseverstehen u.a.); sie vertiefen ihre interkulturelle Kompetenz durch den Vergleich zwischen mutter- und fremdsprachlichen Gegebenheiten. Zentrale Inhalte: Aufbaukurs Sprachpraxis zu einem frei wählbaren Themenkomplex (Hörverstehen, Leseverstehen, Schreiben, Wortschatz) sowie angeleitetes Selbststudium	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Übung: Post-CLC-Course *Contents*: Advanced Essay Training oder Aural/Reading Comprehension oder Advanced Translation oder Vocabulary Training oder Discussion and Essay Writing	2 WLH
Course: Independent Study zum Post-CLC-Course *Contents*: Die Studierenden erweitern und optimieren unter Einsatz der vermittelten Kenntnisse und Techniken ihre Fertigkeiten im gewählten sprachpraktischen Bereich, so dass sie auch komplexere Aufgaben themen- und situationsangemessen ohne Schwierigkeiten bewältigen können. Sie können die erworbenen aktiven und passiven Sprachfertigkeiten erfolgreich in fachwissenschaftliche Aufgabenstellungen umsetzen. Im Kurs Advanced Aural Comprehension vertiefen Studierende ihre Hörkompetenz im Englischen und reflektieren zentrale Kursinhalte. Dies erfolgt beispielsweise, indem Studierende Audioaufnahmen zusammenfassen, eine kommentierte Bibliographie der Bücher erstellen, die zwar auf der Kursbücherliste stehen, auf die aber aus Zeitgründen während des Kurses nicht tiefgehend eingangen werden kann; einen Essay über einen Aspekt des Kurs verfassen. Am Ende des Kurses reichen Studierende entsprechende Arbeiten ein. Im Kurs Vocabulary Training vertiefen Studierende ihren Wortschatz im Englischen und reflektieren einige der Kursinhalte. Dies erfolgt beispielsweise, indem Studierende eine Zusammenfassung eines Texts (z.B. eines Zeitungsartikels) erstellen, welcher Wörter enthät, die nicht während des Kurses behandelt werden; eine kommentierte Bibliographie der Bücher, die zwar auf der Kursbücherliste stehen, auf die aber aus Zeitgründen während des Kurses nicht tiefgehend eingangen werden kann; einen Essay bzw. eine Kurzgeschichte in englischer Sprache über einen Aspekt des Kurs (z.B. *Idioms in Use*) verfassen, in dem Studierende neue Wörter erlernen und im richtigen Kontext verwenden. Am Ende des Kurses reichen Studierende entsprechende Arbeiten ein.	

Der Independent-Study-Anteil umfasst 75 Stunden des gesamten Selbststudiums. Im Seminar besteht die Möglichkeit zur Konsultation und Klärung des im Rahmen des Selbststudiums entstandenen Fragen.	
Examination: Term Paper (max. 1200 words) **Examination prerequisites:** regelmäßige Teilnahme	6 C

Examination requirements: sicherer Umgang mit dem gewählten sprachpraktischen Anwendungsbereich	

Admission requirements: B.Eng.203, B.Eng.204, B.Eng.205, B.Eng.206, B.Eng.207	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Additional notes and regulations:
Es ist eines der unter den Zugangsvoraussetzungen genannten Module erfolgreich abzuschließen, bevor dieses Modul belegt werden kann.

Georg-August-Universität Göttingen **Module B.Eng.251: Additional Module: Advanced English Language Skills (Creative Writing)**	3 C 2 WLH

Learning outcome, core skills: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem gewählten sprachpraktischen Vermittlungsmodul durch eine zusätzliche Übung zur Sprachpraxis mit der Schwerpunktausrichtung auf schriftliche Sprachkompetenzen und kreatives Schreiben. Studierende erwerben schriftliche Kompetenzen durch Vermittlung hierfür relevanter fortgeschrittener (Teil-)Fertigkeiten und Inhalte wie Textanalyse, Sprachbeherrschung, Wortschatz, Texterstellung, ...	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Übung: Advanced English-Language Written Skills	2 WLH
Examination: Portfolio (max. 2500 words) **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: sicherer Umgang mit Phänomenen aus dem gewählten Bereich (kreatives Schreiben, Textabfassung, Wortschatz, Grammatik)	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: 20	

Additional notes and regulations:
Dieses Modul richtet sich an Studierende, die ihre schriftliche Sprachkompetenz im Englischen zusätzlich verbessern möchten. Die Lehrveranstaltung "Preparation for TOEFL.iTP" kann in dieses Modul nicht eingebracht werden.

Georg-August-Universität Göttingen **Module B.Eng.252: Additional Module: Aspects of British, Irish or American Culture and Institutions**	3 C 2 WLH

Learning outcome, core skills: Kompetenzen: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem sprachpraktischen Vertiefungsmodul durch eine zusätzliche Übung mit einem landeskundlichem Schwerpunkt aus dem nicht gewählten Teilbereich. Studierende erwerben grundlegende Fachkompetenzen zum Verständnis von Stellung und Rezeption des Fachs in der Gesellschaft. Sie erwerben Mittlerkompetenzen im Hinblick auf kulturelle, gesellschaftliche und politische Grundlagen auch für spätere nicht-schulische Tätigkeiten. Das Modul vermittelt dabei soziokulturelles Orientierungswissen. Zentrale Inhalte: Grundlegende Kenntnisse zu Geschichte, Kultur und Gesellschaft der wichtigsten Zielsprachenländer. Verständnis von Stellung und Rezeption des Fachs in der Gesellschaft. Vermittlung von kulturellen, gesellschaftlichen und politischen Grundlagenkenntnissen	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Übung zu britischen Culture and Institutions, Übung zu irischen Culture and Institutions oder Übung zu amerikanischen Culture and Institutions (Exercise)	2 WLH
Examination: Präsentation (ca. 30 Min.) mit schriftlicher Ausarbeitung (max. 1800 Wörter), not graded **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: Grundkenntnisse zu Geschichte, Gesellschaft und Aufbau des behandelten fremdsprachlichen Staats; grundlegendes Verständnis von Stellung und Rezeption in der Gesellschaft	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Eng.253: Additional Module: Advanced English Language Skills (Oral/Listening Competences)**	3 C 2 WLH

Learning outcome, core skills: Kompetenzen: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem gewählten sprachpraktischen Vermittlungsmodul durch eine zusätzliche Übung zur Sprachpraxis mit einer Schwerpunktausrichtung auf mündliche und Hörverstehenskompetenzen. Studierende erwerben soziale und kommunikative Kompetenzen (Sprachmittlerkompetenzen) durch Vermittlung hierfür relevanter fortgeschrittener (Teil-)Fertigkeiten und Inhalte wie Sprachbeherrschung, Wortschatz u.a.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Übung: Advanced English-Language Oral Skills	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen	3 C

Examination requirements: sicherer Umgang mit Phänomenen aus dem gewählten Bereich (Hörverstehen,Leseverstehen, Wortschatz, ...)	

Admission requirements: B.Eng.202	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: 20	

Additional notes and regulations:
Dieses Modul richtet sich an Studierende, die ihre mündliche Sprachkompetenz im Englischen zusätzlich verbessern möchten.

Georg-August-Universität Göttingen **Module B.Eng.254: Additional Module: Advanced English Language Skills (Written English)**	3 C 2 WLH

Learning outcome, core skills: Kompetenzen: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem gewählten sprachpraktischen Vermittlungsmodul durch eine zusätzliche Übung zur Sprachpraxis mit der Schwerpunktausrichtung auf schriftliche Sprachkompetenzen Studierende erwerben soziale und kommunikative Kompetenzen (Sprachmittlerkompetenzen) durch Vermittlung hierfür relevanter fortgeschrittener (Teil-)Fertigkeiten und Inhalte wie Sprachbeherrschung, Wortschatz, Texterstellung, ...	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Übung: Advanced English-Language Written Skills	2 WLH
Examination: Klausur (90 Min.) oder Portfolio (max. 2500 Wörter) **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: sicherer Umgang mit Phänomenen aus dem gewählten Bereich (Textabfassung, Wortschatz, Grammatik, Übersetzung, …)	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: 20	

Additional notes and regulations:
Dieses Modul richtet sich an Studierende, die ihre schriftliche Sprachkompetenz im Englischen zusätzlich verbessern möchten. Die Lehrveranstaltung "Preparation for TOEFL.iTP" kann in dieses Modul nicht eingebracht werden.

Georg-August-Universität Göttingen **Module B.Eng.271: Comprehensive Language, Culture and Institutions Module for Students from Abroad**	6 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Abschluß sind Studierende in der Lage, zentrale Eigenschaften und Besonderheiten des kulturellen Lebens und der Institutionen im englischsprachigen Raum zu benennen und zu beschreiben, auf ihre kulturellen Unterschiede zum Heimatland hin zu untersuchen und zu interpretieren; Standardsituationen im alltäglichen Bereich und formalere Kontexte im akademischen und nicht-akademischen Bereich lexikalisch korrekt, stilistisch angemessen und landeskundlich lompetent zu meistern. Sie haben darüber hinaus ihre grammatischen Kompetenzen und ihre translatorischen Fertigkeiten Deutsch-Englisch im Hinblick auf landeskundliche Themen und Alltagssituationen vertieft.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Comprehensive Language / Culture and Institutions Course for ERASMUS Students	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regelmäßige Teilnahme; Präsentation (20 Min) oder Portfolio (2000 Wö)	6 C

Examination requirements: - Die Studierenden sind mit den landeskundlichen Gegebenheiten des von ihnen gewählten englischsprachigen Raumes vertraut und können ihre Kenntnisse in der geforderten Textproduktion einsetzen. - Die Studierenden haben unter Einsatz der vermittelten Lernstrategien ein Vokabular und eine Übersetzungskompetenz erworben, die sie in die Lage versetzen, landeskundliche Texte zu verstehen, angemessen vom Deutschen ins Englische zu übersetzen und kritisch zu diskutieren.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations: Dieses Modul richtet sich an alle Studierenden, die über das Erasmus-Programm bzw. über ein anderes Austauschprogramm nach Göttingen kommen und ihre sprachpraktischen und landeskundlichen Kompetenzen im Hinblick auf den englischsprachigen Bereich vertiefen wollen.

Georg-August-Universität Göttingen **Module B.Eng.272: Additional Module: English Language Practice**	5 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Grammatikalische, phonetische/phonologische Eigenheiten des Englischen zu erkennen und diese Erkenntnisse regelgeleitet und kontextsensitiv auf neue Situationen zu transferieren; • Grundlagen des akademischen Schreibens zu verstehen und bei der Erstellung von Texten anzuwenden Nach Rücksprache mit dem ERASMUS-Beauftragten müssen ZWEI der folgenden Lehrveranstaltungen besucht werden.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Comprehensive Language Course Grammar *Contents*: Kernbereiche praktischer englischer Grammatik (z.B. Technical Terminology, Tense/ Aspect, Determiners, Prepositions, Collocations)	2 WLH
Examination: Written examination (60 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Academic Writing *Contents*: Grundlegende Methoden und Techniken des effektiven wissenschaftlichen Schreibens (z.B. Aspects of Linguistic Accuracy, Register, Style)	1 WLH
Examination: Portfolio (max. 2000 words), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Oral Practice and Pronunciation	2 WLH
Examination: Oral examination (approx. 30 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Introduction to British or American Phonetics	2 WLH
Examination: Written examination (60 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Course: Listening/Reading Comprehension (LRC)	2 WLH
Examination: Written examination (60 minutes), not graded **Examination prerequisites:** regelmäßige Teilnahme	

Examination requirements:	

(Abhängig von den gewählten Kursen) Die Studierenden: • sind mit den grammatikalischen Kerneigenschaften des Englischen vertraut und können ihr Wissen auf neue Situationen anwenden • sind mit den wesentlichen Aspekten und Anforderungen schriftlicher Arbeiten im universitären Kontext vertraut, insbesondere mit den Anforderungen des Seminars für Englische Philologie • kennen phonetische Unterschiede zwischen Ausgangs- und Zielsprache und können diese Kenntnisse und Fertigkeiten aktiv anwenden und in eine korrekte Aussprache umsetzen • können erlernte Techniken einsetzen, um unbekannte schriftliche und mündliche Texte zu verstehen	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra Pfändner, Johannes
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5

Additional notes and regulations:
Dieses Modul richtet sich an Erasmusstudierende, die ihre Sprachkompetenz im Englischen verbessern möchten. Alle in diesem Modul angebotenen Kurse sind Teil des Kerncurriculums des Bachelorstudiengangs. Ist die Nachfrage nach Plätzen höher als das Angebot, werden Bachelorstudierende bevorzugt behandelt.

Nach Rücksprache mit dem ERASMUS-Beauftragten müssen ZWEI der folgenden Lehrveranstaltungen besucht werden.

Georg-August-Universität Göttingen **Module B.Eng.273: Additional Module: Advanced English Language Skills (Oral/Listening Competences)**	6 C 2 WLH

Learning outcome, core skills: Kompetenzen: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem gewählten sprachpraktischen Vermittlungsmodul durch eine zusätzliche Übung zur Sprachpraxis mit einer Schwerpunktausrichtung auf mündliche und Hörverstehenskompetenzen Studierende erwerben soziale und kommunikative Kompetenzen (Sprachmittlerkompetenzen) durch Vermittlung hierfür relevanter fortgeschrittener (Teil-)Fertigkeiten und Inhalte wie Sprachbeherrschung, Wortschatz u.a.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Übung: Advanced English-Language Oral Skills	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** regelmäßige Teilnahme	3 C

Course: Übung: Vocabulary Training	2 WLH
Examination: Portfoliobesteht aus vier angebotenen "quizzes" **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: sicherer Umgang mit Phänomenen aus dem gewählten Bereich (Hörverstehen, Leseverstehen, Wortschatz, …)	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra Pfändner, Johannes
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Additional notes and regulations:
Dieses Modul richtet sich an Studierende, die ihre mündliche Sprachkompetenz im Englischen zusätzlich verbessern möchten.

Georg-August-Universität Göttingen **Module B.Eng.274: Additional Module: Aspects of British, Irish or American Culture and Institutions**	3 C 2 WLH

Learning outcome, core skills: Kompetenzen: Verbreiterung der grundlegenden Kenntnisse und Techniken aus dem sprachpraktischen Vertiefungsmodul durch eine zusätzliche Übung mit einem landeskundlichem Schwerpunkt aus dem nicht gewählten Teilbereich. Studierende erwerben grundlegende Fachkompetenzen zum Verständnis von Stellung und Rezeption des Fachs in der Gesellschaft. Sie erwerben Mittlerkompetenzen im Hinblick auf kulturelle, gesellschaftliche und politische Grundlagen auch für spätere nicht-schulische Tätigkeiten. Das Modul vermittelt dabei soziokulturelles Orientierungswissen. Zentrale Inhalte: Grundlegende Kenntnisse zu Geschichte, Kultur und Gesellschaft der wichtigsten Zielsprachenländer. Verständnis von Stellung und Rezeption des Fachs in der Gesellschaft. Vermittlung von kulturellen, gesellschaftlichen und politischen Grundlagenkenntnissen	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Übung zu britischen Culture and Institutions, Übung zu irischen Culture and Institutions oder Übung zu amerikanischen Culture and Institutions (Exercise)	2 WLH
Examination: Präsentation (ca. 30 Min.) mit schriftlicher Ausarbeitung (max. 1800 Wörter), not graded **Examination prerequisites:** regelmäßige Teilnahme	3 C

Examination requirements: Grundkenntnisse zu Geschichte, Gesellschaft und Aufbau des behandelten fremdsprachlichen Staats; grundlegendes Verständnis von Stellung und Rezeption in der Gesellschaft	

Admission requirements: B.Eng.201	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Eng.304: Overview: Topics and Themes in Anglophone Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: Studierende vertiefen • erworbene Methoden- und Lernkompetenzen im Umgang mit literatur- und kulturhistorischen Texten und Epochen (z.B. komplexe Zusammenhänge epochenübergreifend erkennen und darstellen, epochenübergreifende Systematiken erkennen und beschreiben, Bewertungsmaßstäbe epochengerecht einsetzen) • Fachkompetenzen im Hinblick auf die Analyse von und den Umgang mit literarischen Texten, kulturgeschichtlichen Zusammenhängen und Theoriekomplexen • die Kompetenz im grundlegenden Umgang mit literatur- und kulturwissenschaftlichen Forschungspositionen	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Vorlesung zur anglophonen Literatur- und Kulturgeschichte, zu einem Theorie- bzw. Themenkomplex (Lecture)	2 WLH
Course: Vertiefendes Selbststudium *Contents*: Der Selbststudienanteil dient dazu, einen Kernbereich der gewählten Vorlesung vertieft zu bearbeiten und theoriegeleitet zu diskutieren. Dies können Primärtexte sein, zentrale Texte der Sekundärliteratur oder sonstige Materialien (z.B. Kunstgegenstände, außerliterarische Texte).	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Keine. Das regelmäßige Hören der Vorlesung sowie die eigenständige weiterführende Auseinandersetzung mit den Inhalten werden dringend empfohlen. **Examination requirements:** • vertiefte Überblickskenntnisse zu einer literaturhistorischen Epoche, zu einem Theorie- bzw. Themenkomplex • sichere Beherrschung von Textanalyse- und Kontextualisierungsmethoden • Einordnung von Texten in literarische und kulturelle Zusammenhänge und Epochen	6 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.305: Periods in Anglophone Literature and Culture**	7 C 1 WLH

Learning outcome, core skills: Nach erfolgreichem Abschluss des Moduls • beherrschen Studierende zwei Epochen aus der anglophonen Literatur- und Kulturgeschichte in ihren zentralen Entwicklungslinien; • kennen Studierende die wichtigsten kanonischen Autoren zweier Epochen aus der anglophonen Literatur- und Kulturgeschichte, können sie zeitlich einordnen und zentrale Werke benennen; • kennen Studierende die wesentlichen kanonischen Texte der drei Großgattungen (Roman, Drama, Gedicht) aus der anglophonen Literatur- und Kulturgeschichte, können sie zeitlich einordnen und ihren Autoren zuordnen; • kennen Studierende die in zwei Epochen aus der anglophonen Literatur- und Kulturgeschichte wesentlichen gesellschaftlichen Entwicklungen in ihren Grundzügen und ungefähren zeitlichen Verortungen; • können Studierende Epochen aus der anglophonen Literatur- und Kulturgeschichte grob gegeneinander abgrenzen und diese Abgrenzung sachlich begründen; • haben Studierende einen Einblick in unterschiedliche Herangehensweisen an die Darstellung durch Literaturgeschichten, können diese kritisch bewerten sowie in ihrer Entwicklung skizzieren.	**Workload:** Attendance time: 14 h Self-study time: 196 h

Course: Workshop zum Lesen und Verwenden von Literaturgeschichten (optional) *Contents*: Die Teilnahme am Workshop ist optional.	1 WLH
Examination: computerbasierte semesterbegleitend abgelegte Teilklausuren (90 minutes), not graded **Examination requirements:** Die Prüfung besteht aus computerbasierten, semesterbegleitend abgelegten Teilklausuren (2x 14 Min. geschlossene Fragen, 2x 18 Min. geschlossene und offene Fragen, 1x 26 Min. Kurzessay; insges. 90 Min.). Die Prüfung betrifft zwei Epochen der anglophonen Literatur- und Kulturwissenschaft im Überblick auf der Basis des eigenverantwortlichen Studiums von zwei bis drei einschlägigen Literaturgeschichten. Studierende zeigen: Beherrschen von Epochengrenzen und Gründen für Epochisierungen; Benennung zentraler Autoren und Werke der Epochen (Kanonkenntnisse); zeitliche Einordnung (relativ zueinander) von Texten und Autoren; Kenntnisse zentraler gesellschaftlicher und literaturhistorischer Entwicklungslinien. Angebotene Epochen: Early Modern Period; The 'Long' Eighteenth Century; Victorian Period; Twentieth-Century Literature; Contemporary Literature. Die im Modul B.Eng.304 abgedeckte Epoche kann hier nicht noch einmal abgeprüft werden.	7 C

Admission requirements:	**Recommended previous knowledge:**

none	B.Eng.304
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff Dr. Frauke Reitemeier
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6

Georg-August-Universität Göttingen **Module B.Eng.331: Advanced Studies in Anglophone Literature: Focus on Literature**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Studierende besitzen Methodenkompetenzen durch Erwerb von forschungsbasierten Fertigkeiten im fachwissenschaftlichen Umgang mit Texten und literaturwissenschaftlichen Zusammenhängen. Sie vertiefen ihre Sozialkompetenzen (v.a. Kritik- und Handlungskompetenzen, Flexibilität im Umgang mit fremden Ansätzen). Zentrale Inhalte: Forschungsorientierte fachwissenschaftliche Vertiefung im Teilfach "Anglistische Literatur- und Kulturwissenschaft" mit Schwerpunktsetzung im Bereich anglophone Literaturwissenschaft.	Attendance time: 56 h Self-study time: 124 h

Course: Forschungsorientiertes anglophones Seminar mit literaturwissenschaftlichem Schwerpunkt	2 WLH
Examination: Term Paper (max. 5500 words)	6 C

Examination requirements:	
sicherer Umgang mit Methoden und Problemen der Textanalyse sowie mit relevanter Forschungsliteratur bezogen auf ein selbst gewähltes Untersuchungsfeld zum jeweiligen Kursinhalt	

Admission requirements:	**Recommended previous knowledge:**
B.Eng.302	none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Additional notes and regulations:
Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen.

Georg-August-Universität Göttingen **Module B.Eng.332: Advanced Studies in British Culture**	6 C 2 WLH

Learning outcome, core skills: Studierende vertiefen v.a. ihre Methodenkompetenzen durch Erwerb von forschungsbasierten Fertigkeiten im fachwissenschaftlichen Umgang mit kulturellen Produkten (kulturellen "Texten") bzw. Medien und kulturwissenschaftlichen Zusammenhängen. Sie vertiefen ihre Sozialkompetenzen (v.a. Kritik- und Handlungskompetenzen, Flexibilität im Umgang mit fremden Ansätzen). Zentrale Inhalte: Forschungsorientierte fachwissenschaftliche Vertiefung im Teilfach "Anglistische Literatur- und Kulturwissenschaft" mit Schwerpunktsetzung im Bereich Cultural Studies/ Kulturwissenschaft	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forschungsorientiertes anglistisches Hauptseminar mit kulturwissenschaftlichem Schwerpunkt	2 WLH
Examination: Term Paper (max. 5500 words)	6 C

Examination requirements: sicherer Umgang mit Methoden und Problemen der Kulturwissenschaft sowie mit relevanter Forschungsliteratur	

Admission requirements: B.Eng.302	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Additional notes and regulations:
Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen.

Georg-August-Universität Göttingen **Module B.Eng.351: Additional Module: Anglophone Literature and Culture**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
Kompetenzen: Verbreiterung der grundlegenden literaturwissenschaftlichen Kenntnisse und Kompetenzen durch eine zusätzliche Lehrveranstaltung aus dem Angebot der Abt. für Anglistische Literatur- und Kulturwissenschaft. Studierende erwerben grundlegende Methodenkompetenzen im Umgang mit theoretischen Texten aus der Literaturwissenschaft. Sie vertiefen ihre Analysekompetenz durch den Vergleich von Herangehensweisen an verschiedene Textarten. Sie vertiefen darüber hinaus grundlegende Fachkompetenzen im Umgang mit Texten sowie literaturwissenschaftlichen Zusammenhängen. Zentrale Inhalte: Beispielhafte Einübung der Methodik historisch-hermeneutischen Textverständnisses. Beispielhafte Einübung der Methodik systematisch-formaler Textanalyse. Einführung in Techniken und Hilfsmittel literaturwissenschaftlicher Forschung.	Attendance time: 28 h Self-study time: 92 h

Course: Lehrveranstaltung zur anglophonen Literatur- und Kulturgeschichte	2 WLH
Examination: Term Paper (max. 3500 words)	4 C

Examination requirements:	
Studierende weisen nach, dass sie literarische Texte bzw. kulturelle Phänomene theoriegeleitet unter einer selbst gewählten Fragestellung entsprechend dem jeweiligen Kursinhalt analysieren können; sie zeigen die sichere Beherrschung von literatur- und kulturanalytischen Methoden und Begriffen; sie weisen nach, dass sie themenspezifisch geeignete Sekundärliteratur recherchieren und kritisch reflektiert in die Analyse einbeziehen können.	

Admission requirements: B.Eng.101	**Recommended previous knowledge:** B.Eng.201
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 30	

Additional notes and regulations:
Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen.

Georg-August-Universität Göttingen **Module B.Eng.401: North American Literature and Culture I**	8 C 4 WLH

Learning outcome, core skills: Die Studierenden: - erwerben im Schwerpunkt grundlegende Methoden- und Lernkompetenzen im Umgang mit literatur- und kulturhistorischen Zusammenhängen (z.B. Strukturieren von Informationen und Zusammenhängen, Erfassen komplexer Zusammenhänge, Transfer von Kenntnissen auf andere Texte). - vertiefen erworbene Methodenkompetenzen in der Analyse und Bewertung einzelner Texte. - vertiefen grundlegende Fachkompetenzen im Umgang mit Texten sowie literatur- und kulturhistorischen Zusammenhängen und entwickeln dadurch interkulturelle Kompetenz. - erwerben literatur- und kulturhistorische Kenntnisse zu einer Epoche der amerikanischen Literaturgeschichte durch intensives Studium ausgewählter Texte. - wenden die Methoden historisch-hermeneutischen Textverständnisses und systematisch-formaler Textanalyse an konkreten Beispielen an. - erlernen und nutzen Techniken und Hilfsmittel literaturwissenschaftlicher Forschung.	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Vorlesung zur amerikanischen Literatur- und Kulturgeschichte (Lecture)	2 WLH
Course: Lehrveranstaltung zur amerikanischen Literatur	2 WLH
Examination: Take Home Exam (max. 3000 words) **Examination prerequisites:** Die regelmäßige Anwesenheit in LV 2 sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. LV 2 zusätzlich: mündliche Leistung (Referat/Präsentation ca. 15 min.), ggf. 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (insg. max. 750 Wörter) bzw. vergleichbare schriftliche Leistungen **Examination requirements:** Grundlegende Kenntnisse zur gewählten literatur- und kulturhistorischen Epoche (Textkenntnis, Begrifflichkeit, Epochengrenzen, Zusammenhänge). Sicherer Umgang mit dem gewählten Primärtext; Grundkenntnisse im Umgang mit Sekundärliteratur; Grundkenntnisse hinsichtlich Stil und Strukturierung wissenschaftlicher Arbeiten	8 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.402: North American Literature and Culture II**	7 C 4 WLH

Learning outcome, core skills: Die Studierenden - vertiefen grundlegende Methoden- und Lernkompetenzen im Umgang mit literatur- und kulturhistorischen Zusammenhängen (z.B. Strukturieren von Informationen und Zusammenhängen, Gliederung komplexer Zusammenhänge, Transfer von Kenntnissen auf andere Texte). - vertiefen Methodenkompetenzen in der Analyse und Bewertung einzelner Texte. - erwerben grundlegende Fachkompetenzen im Umgang mit kulturhistorischen Texten sowie Methoden-, Lern- und interkulturelle Kompetenzen im Vergleich verschiedener literaturhistorischer sowie kulturhistorischer Zusammenhänge. - erweitern die im Aufbaumodul 1 erworbenen Kenntnisse durch intensives Studium ausgewählter Texte einer Epoche der amerikanischen Literatur. - erweitern die im Aufbaumodul 1 erworbenen Kenntnisse durch extensives Studium von beispielhaften literarischen wie nicht-literarischen Texten (z.B. politische Pamphlete, Reden, Essays, Predigten, Verfassungstexte) der amerikanischen Kulturgeschichte. - wenden Methoden systematisch-formaler Textanalyse unter besonderer Berücksichtigung verschiedener Textgattungen an. - vergleichen und verknüpfen die Techniken literaturwissenschaftlicher und kulturwissenschaftlicher Forschung.	**Workload:** Attendance time: 56 h Self-study time: 154 h

Course: Vorlesung zur amerikanischen Literatur- und Kulturgeschichte (Lecture)	2 WLH
Course: Lehrveranstaltung "Cultural History and Rhetoric"	2 WLH
Examination: Take Home Exam (max. 3500 words) **Examination prerequisites:** Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. Präsentation (in Form von Expertengruppen bzw. Moderationsteams, ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl. Leistungen (Insg. max. 750 Wörter) (LV 2) **Examination requirements:** Grundlegende Kenntnisse zur gewählten literatur- und kulturhistorischen Epoche (Textkenntnis, Begrifflichkeit, Epochengrenzen, Zusammenhänge). Grundkenntnisse zur amerikanischen Kulturgeschichte (grundlegende Daten und historische Ereignisse, Entwicklungslinien); Grundkenntnisse in der Methodik kulturhistorischer Recherche; Grundkenntnisse in der Analyse nicht-literarischer Quellen und der Auswertung von Sekundärliteratur	7 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language:	**Person responsible for module:**

English	Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.403: North American Literature and Culture III**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden - vertiefen erworbene Methoden- und Lernkompetenzen im Umgang mit literatur- und kulturhistorischen Texten und Epochen (z.B. komplexe Zusammenhänge epochenübergreifend erkennen und darstellen, epochenübergreifende Systematiken erkennen und beschreiben, Bewertungsmaßstäbe epochengerecht einsetzen). - vertiefen ihre Fachkompetenzen im Hinblick auf die Analyse von und den kulturwissenschaftlichen Umgang mit verschiedenen Texten sowie unter Berücksichtigung von forschungsorientierten Ansätzen. - vertiefen die kultur- und literaturgeschichtlichen Kenntnisse in der Amerikanistik durch intensives Epochenstudium. - beschreiben, analysieren und interpretieren ein kulturgeschichtliches Problem in forschungsorientierter Form (ggf. zur Vorbereitung einer Bachelorarbeit). - nutzen und verknüpfen dabei die bereits erworbenen Techniken literatur- und kulturwissenschaftlichen Arbeitens.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung zur amerikanischen Literatur- und Kulturgeschichte (Lecture)	2 WLH
Course: Lehrveranstaltung zur amerikanischen Literatur	2 WLH
Examination: Hausarbeit (max. 3500 Wörter) oder Klausur (90 Minuten) **Examination prerequisites:** Die regelmäßige Anwesenheit in LV 2 sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. LV 2 außerdem: mündliche Leistung (Referat/Präsentation ca. 15 min.), ggf. 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (insg. max. 750 Wörter) **Examination requirements:** sicher Beherrschung von Textanalyse- und Kontextualisierungsmethoden; Kenntnisse in der literaturhistorischen/kulturhistorischen Vernetzung von Texten und Autoren. Vertiefte Überblickskenntnisse zu einer literatur-/kulturhistorischen Epoch. Die Prüfungsleistung bezieht sich inhaltlich auf die Lehrveranstaltung. Studierenden, die eine BA-Arbeit im Bereich Nordamerikastudien planen, wird geraten, in diesem Modul die Hausarbeit zu wählen.	6 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.402
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	4 - 5
Maximum number of students: not limited	

Additional notes and regulations:

Die Prüfungsleistungen sind alternativ zu verstehen.

Studierende können zwischen einer Klausur in der Vorlesung und einer Hausarbeit in der Lehrveranstaltung wählen. Studierenden, die eine BA-Arbeit im Bereich Nordamerikastudien planen, wird geraten, in diesem Modul die Hausarbeit zu wählen.

Georg-August-Universität Göttingen **Module B.Eng.404: Advanced Module: North American Media and Visual Culture**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden - analysieren und interpretieren diverse Medien und künstlerische Ausdrucksformen der nordamerikanischen Kulturgeschichte (z.B. Film, Fernsehen, Fotografie, bildende Kunst,Musik, neue Medien) gemäß fachwissenschaftlich angemessener Verfahren. - erwerben und verwenden kulturwissenschaftliche Methoden und Analysetechniken unter besonderer Berücksichtigung audiovisueller und digitaler Medienformate. - beschreiben, differenzieren und bewerten unterschiedliche Gestaltungs- und Darstellungsformen hinsichtlich ihrer medialen Spezifität und Materialität. - verwenden und verknüpfen narratologische, kultur- und medienwissenschaftliche Forschungstechniken.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Einführungsseminar Introduction to Film and Media Analysis	2 WLH

Course: Medienwissenschaftliche Analyse und Interpretation	2 WLH
Examination: Term Paper (max. 3000 words) **Examination prerequisites:** Die regelmäßige Anwesenheit in LV 1 und 2 sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen. mündliche Leistung (Referat/Präsentation ca. 15 min.), 2-3 Quizzes (à ca.5-10 min.), oder kleinere schriftliche Hausaufgaben (insg. max. 750 Wörter) bzw. vergleichbare schriftliche Leistungen (Take Home Exam) **Examination requirements:** Überblickswissen zur Film- und Medienanalyse, mit besonderer Berücksichtigung des amerikanischen Kinos, Fernsehens und visueller Kultur; Fähigkeit zur kultur- und medienwissenschaftlichen Analyse audiovisueller und digitaler Texte und Medien; Fähigkeit, eigene Forschungsthesen zu formulieren und Forschungsfragen selbstständig wissenschaftlich zu bearbeiten.	6 C

Admission requirements: B.Eng.401	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Die erfolgreiche Teilnahme an der Veranstaltung "Introduction to Film and Media Analysis" ist Voraussetzung für die Belegung der Veranstaltung "Medienwissenschaftliche Analyse und Interpretation". Die Prüfungsvoraussetzung ist auch in diesem Fall die regelmäßige Teilnahme.

Georg-August-Universität Göttingen **Module B.Eng.431: Advanced Studies in American Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: Die Studierenden - vertiefen ihre Methodenkompetenzen durch Erwerb von forschungsbasierten Fertigkeiten im fachwissenschaftlichen Umgang mit Texten sowie literatur- und kulturhistorischen Zusammenhängen - vertiefen ihre Sozialkompetenzen (v.a. Kritik- und Handlungskompetenzen, Flexibilität im Umgang mit fachfremden Ansätzen). - vertiefen und erweitern ihre Kompetenzen zur theoriegeleiteten Textanalyse (anhand eines exemplarischen Forschungsproblems). - reflektieren kritisch das eigene methodische Vorgehen vor dem Hintergrund fachspezifischer und interdisziplinärer Verfahrensweisen	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Forschungsorientiertes Seminar zur nordamerikanischen Literatur und Kultur (Seminar)	2 WLH
Course: Independent Study zum Forschungsseminar *Contents*: Für den Selbststudiumsanteil, welcher 60 Stunden des gesamten Selbststudiums umfasst, wird ein zuvor mit einer Lehrperson vereinbartes Thema im Bereich der American Studies eigenständig erarbeitet. Ziel ist ein thematisch fokussiertes, theorie- und methodengestütztes Selbststudium, für das relevante Primär- und Sekundärtexte in fachlich einschlägigen wissenschaftlichen Datenbanken und Publikationen recherchiert und Forschungsthesen entworfen werden. Die Studierenden entwickeln die Fähigkeit, eigene Ansätze kritisch zu reflektieren, im wissenschaftlichen Dialog mit der Lehrperson anhand von Thesenpapieren zu begründen und im fachlichen Kontext zu verorten. Über die Independent Study-Anteile der amerikanistischen Module vertiefen Studierende ihre Methodenkompetenz und ihr Theoriebewusstsein. Sie stärken ihre Fähigkeit, selbstständig und forschungsorientiert wissenschaftlich zu arbeiten. Anleitung, Rückmeldung und Überprüfung der Fortschritte erfolgen in mindestens drei über die Vorlesungszeit verteilten Treffen.	
Examination: Hausarbeit oder Forschungsbericht (max. 5000 words) **Examination prerequisites:** mündl. Leistung (Präsentation, Diskussionsleitung ca. 20 Min.), 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl. Leistungen (insg. max. 750 Wörter); Independent Study: Thesenpapier/Exposé (max. 1500 Wörter)	6 C

Examination requirements: Fähigkeit zur extensiven Literaturrecherche; Fähigkeit zum kritischen Umgang mit Sekundärliteratur; Fähigkeit, komplexere Forschungsthesen zu formulieren, selbstständig wissenschaftlich darzulegen und überzeugend zu argumentieren	

Admission requirements: none	**Recommended previous knowledge:** B.Eng.401, B.Eng.403
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Die regelmäßige Anwesenheiit sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen.

Georg-August-Universität Göttingen **Module B.Eng.452: Additional Module: American Cultural History**	4 C 2 WLH

Learning outcome, core skills: Die Studierenden - vertiefen grundlegende Methoden- und Lernkompetenzen im Umgang mit literatur- und kulturhistorischen Zusammenhängen (z.B. Strukturieren von Informationen und Zusammenhängen, Gliederung komplexer Zusammenhänge, Transfer von Kenntnissen auf andere Texte). - vertiefen Methodenkompetenzen in der Analyse und Bewertung einzelner Texte. - erwerben grundlegende Fachkompetenzen im Umgang mit kulturhistorischen Texten sowie Methoden-, Lern- und interkulturelle Kompetenzen im Vergleich verschiedener literaturhistorischer sowie kulturhistorischer Zusammenhänge. - erweitern die im Aufbaumodul 1 erworbenen Kenntnisse durch extensives Studium von beispielhaften nicht-literarischen Texten der amerikanischen Kulturgeschichte. - wenden die Methoden systematisch-formaler Textanalyse unter besonderer Berücksichtigung der Anforderungen verschiedener Textgattungen an. - vergleichen und verknüpfen die Techniken literaturwissenschaftlicher und kulturwissenschaftlicher Forschung.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Cultural History and Rhetoric	2 WLH
Examination: Take Home Exam (max. 3500 words) **Examination prerequisites:** Präsentation (in Form von Expertengruppen bzw. Moderationsteams, ca. 20 Min.), ggf. 2-3 Quizzes (à ca.5-10 min.) oder vergleichbare kurze schriftl. Leistungen (insg. max. 750 Wörter) **Examination requirements:** Grundkenntnisse zur amerikanischen Kulturgeschichte (grundlegende Daten und historische Ereignisse, Entwicklungslinien); Grundkenntnisse in der Methodik kulturhistorischer Recherche; Grundkenntnisse in der Analyse literarischer und nicht-literarischer Quellen und der Beurteilung von Sekundärliteratur	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 35	

Additional notes and regulations:
Dieses Modul richtet sich zum einen an Studierende, die das Modul B.Eng.402 bereits abgeschlossen haben und einen weiteren, daran anschließenden Kurs zur amerikanischen Kulturgeschichte belegen möchten, zum anderen an Studierende, die einen entsprechenden Kurs zur Verbreiterung ihres Wissens zur anglophonen Literatur- und Kulturwissenschaft nutzen wollen. Soll das Modul ergänzend zu Modul B.Eng.402 belegt werden, ist eine andere thematische Ausrichtung zu wählen.

Die regelmäßige Anwesenheit im Kurs sowie die eigenständige weiterführende Auseinandersetzung mit Kursinhalten werden dringend empfohlen.

Georg-August-Universität Göttingen **Module B.Eng.501: Theoretical Foundations 1 – Syntax**	8 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme • kennen die Studierenden den Zusammenhang zwischen traditioneller, beschreibender Grammatik und einer formalen syntaktischen Theorie, • die Methoden synchroner syntaktischer Analyse, • die Struktureinheiten, Strukturbeziehungen sowie die zentralen Konstruktionen der englischen Syntax, • können die Studierenden die Methoden der modernen Syntax bei der Analyse sprachlicher Daten anwenden, • grammatische Regeln explizieren und formalisieren, • Generalisierungen und Hypothesen formulieren, • alternative syntaktische Analysen bewerten.	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Introduction to Syntactic Theory *Course frequency:* each summer semester	2 WLH
Course: Syntax - Lab Class	2 WLH
Examination: Klausur (90 Min.) oder klausurähnliche Hausarbeit (max. 2000 Wörter)	8 C

Examination requirements: Die Studierenden weisen nach, dass sie die Methoden der syntaktischen Analyse sicher beherrschen, dass sie die zentralen Konstruktionen des Englischen im Rahmen einer syntaktischen Theorie und nach Vorgabe der Lehrveranstaltung analysieren können, und dass sie alternative Analysen bewerten können.	

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 30	

Additional notes and regulations:
Wird eine klausurähnliche Hausarbeit angeboten, stammen die Anteile aus beiden Lehrveranstaltungen dieses Moduls (Theoriekurs und Übung).

Theoriekurs und Übung sollten im selben Semester belegt werden; das vollständige Modul wird jeweils nur im Sommersemester angeboten.

Georg-August-Universität Göttingen **Module B.Eng.502: Theoretical Foundations 2 – Semantics and Pragmatics**	8 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme • kennen die Studierenden Notationssysteme zur adäquaten Beschreibung semantischer und pragmatischer Phänomene des Englischen, • kennen die Zielsetzung semantischer und pragmatischer Theoriebildung, • kennen den Unterschied zwischen Einzelfallbeschreibung, Generalisierung und theoretischer Vorhersage, • kennen Datenquellen und Methoden der Überprüfung von Generalisierungen, • können selbständig im Rahmen einer semantischen bzw. pragmatischen Theorie eine adäquate Beschreibung grammatischer Phänomene des Englischen durchführen, • können selbständig Generalisierungen formulieren und diese überprüfen, • können einfache Regelsysteme validieren.	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Introduction to Formal Semantics and Pragmatics *Course frequency:* each winter semester	2 WLH
Course: Lab Class Semantics and Pragmatics	2 WLH
Examination: Hausarbeit oder klausurähnliche Hausarbeit (max. 2000 words)	8 C

Examination requirements: Die Studierenden weisen nach, dass sie elementare Phänomene der Semantik und Pragmatik kennen und angemessen beschreiben können und dass sie Transferaufgaben nach der Vorgabe der Lehrveranstaltungen lösen können.	

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Clemens Steiner-Mayr
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 30	

Additional notes and regulations:
Theoriekurs und Übung sollten im selben Semester belegt werden; das vollständige Modul wird jeweils nur im Wintersemester angeboten.

Georg-August-Universität Göttingen **Module B.Eng.531: Research-Oriented Linguistics**	6 C 2 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme • kennen die Studierenden alternative grammatische Theorien, • Kriterien zur Charakterisierung und Bewertung grammatischer Theorien, • Methoden der Literaturrecherche, • relevante Forschungsliteratur zu linguistisch wichtigen Gebieten, • können die Studierenden grammatische Theorien bewerten, • linguistische Argumentationen erstellen, • aktuelle sprachwissenschaftliche Forschungsergebnisse rezipieren und reflektieren, • einen eigenständigen forschungsorientierten Beitrag auf dem aktuellen Stand der Forschung erarbeiten.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Forschungsorientiertes linguistisches Hauptseminar	2 WLH
Examination: Term Paper (max. 7500 words)	6 C

Examination requirements: Nachweis der Fähigkeit, relevante Forschungsliteratur zu einem sprachwissenschaftlich relevanten Thema zu recherchieren und zu rezipieren, Forschungsfragen zu extrahieren, den sprachlichen Gegenstand differenziert zu analysieren und eine angemessene Theorie auszuwählen und zu evaluieren	

Admission requirements: B.Eng.503	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Clemens Steiner-Mayr
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Eng.551: Additional Module: Aspects of English Linguistics**	4 C 2 WLH

Learning outcome, core skills: • Erweiterung und Vertiefung der grundlegenden Kenntnisse und Techniken im Bereich der Sprachwissenschaft durch eine zusätzliche Lehrveranstaltung in dem für das Wahlmodul nicht gewählten sprachwissenschaftlichen Teilbereich oder in einem noch nicht abgedeckten Bereich innerhalb des Wahlmoduls. • Erweiterung und Vertiefung der Kompetenz in der Anwendung der Methoden der modernen (synchronen) Sprachwissenschaft bei der Analyse sprachlicher Daten. • Erweiterung und Vertiefung der empirischen und theoretischen Erfassung sprachlicher Phänomene.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Lehrveranstaltung zur englischen Linguistik *Contents*: z.B. zur englischen Phonologie, Morphologie, Morphosyntax, einer syntaktischen Theorie, zur Dialektologie des Englischen	2 WLH
Examination: Klausur (90 Min.) oder klausurähnliche Hausarbeit (max. 2000 Wörter) **Examination requirements:** Abhängig von der Themenstellung der gewählten LV weisen die Studierenden nach, dass sie: - ein sprachliches Phänomen vertieft analysieren und auf der Grundlage grammatischer Theorien und Modelle erklären können; - auf der mit empirischen Methoden gewonnen Daten zur Sprachverwendung Einsicht in die Struktur der Sprache gewinnen können; - Methoden der syntaktischen Analyse sicher beherrschen, dass sie die zentralen Konstruktionen des Englischen im Rahmen einer syntaktischen Theorie und nach Vorgabe der Lehrveranstaltung analysieren können, und dass sie alternative Analysen bewerten können.	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 5
Maximum number of students: not limited	

Additional notes and regulations:
Dieses Modul dient dazu, interessierten Studierenden den Besuch eines Zweigs der englischen Linguistik zu ermöglichen, der nicht durch das Kerncurriculum abgedeckt wird (z.B. einer LV zur phonologischen Sprachstruktur, wenn in das Modul B.Eng.503/504 eine LV zur Morphologie eingebracht wurde).

Georg-August-Universität Göttingen **Module B.Eng.601: Medieval English Literature and Culture**	8 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Grundlegende Überblickskenntnisse im Bereich der englischen Literatur des Mittelalters, ihrer Gattungen und Formen, und ihrer historischen Kontexte anhand wichtiger Hauptwerke zu reproduzieren • Kompetenzen im detaillierten Verständnis der historischen Sprachstufen des Englischen durch selbstständige Übersetzung mit Hilfsmitteln einzuüben und durch Wiederholung zu verfeinern und zu differenzieren • Ausgewählte Hauptwerke der mittelalterlich englischen Literatur im *close reading* kritisch zu kommentieren und erste schriftliche Ausdrucksformen für Form-Inhalt-Beziehungen in den Texten zu entwickeln • und haben erste Begegnung mit der handschriftlichen Überlieferungsform gemacht	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Vorlesung Mediävistik (Lecture) *Contents*: Die Vorlesung bietet im semesterabhängigen Wechsel Überblicksdarstellungen zur mittelalterlichen Literatur Englands, zur historischen Sprachentwicklung des Englischen sowie zu ausgewählten Themen im Bereich der Paläographie, Literaturtheorie, zu wichtigen Sprachdenkmälern und zur Kulturgeschichte des englischen Mittelalters	2 WLH
Examination: Written examination (30 minutes) **Examination requirements:** Je nach thematischer Ausrichtung der Vorlesung Nachweis sprach- und literaturwissenschaftlicher Kompetenzen im Bezug auf die älteren Sprachstufen des Englischen und deren Beschreibung, auf wichtige Hauptwerke des englischen Mittelalters und ihre historischen, kulturellen und materiellen Kontexte.	2 C

Course: Introduction to Medieval English Literature and Culture *Contents*: Die LV soll die Sprach- und Textkenntnis durch regelmäßige Übersetzungsübungen der älteren Sprachstufen vertiefen sowie erste Ansätze zur kritischen Interpretation von Form-Inhalt Beziehungen durch den *close commentary* einüben	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regelmäßige Teilnahme; 1 close commentary (max. 750 Wö) **Examination requirements:** Sprachkenntnisse und Übersetzungstechniken; Methoden des *close commentary* zu Form-Inhalt-Beziehungen	6 C

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf

Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.602: Topics of Medieval English Studies**	6 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • spezifische Kenntnisse zu ausgewählten Themen im Bereich der englischen Literatur des Mittelalters, oder der englischen Sprache oder der Kulturwissenschaft zu reproduzieren • Sprachkenntnisse im Alt- und Mittelenglischen mit Bezug auf spezifische sprach-, literatur- oder kulturgeschichtliche Themen kreativ anzuwenden • Die Analyse mittelalterlich englischer Texte und historischer und gegenwärtiger Sprachphänomene mithilfe wichtiger Arbeitstechniken und Forschungsinstrumente zu vertiefen	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung Mediävistik (Lecture) *Contents*: Die Vorlesung bietet im semesterabhängigen Wechsel Überblicksdarstellungen zur mittelalterlichen Literatur Englands, zur historischen Sprachentwicklung des Englischen sowie zu ausgewählten Themen im Bereich der Paläographie, zu wichtigen Sprachdenkmälern und zur Kulturgeschichte des englischen Mittelalters	2 WLH
Examination: Written examination (30 minutes) **Examination requirements:** Je nach thematischer Ausrichtung der Vorlesung Nachweis sprach- und literaturwissenschaftlicher Kompetenzen im Bezug auf die älteren Sprachstufen des Englischen und deren Beschreibung, auf wichtige Hauptwerke des englischen Mittelalters und ihre historischen, kulturellen und materiellen Kontexte.	2 C

Course: Lehrveranstaltung *Contents*: In den Lehrveranstaltungen werden semesterabhängig Themen zur Sprach-, Literatur- oder Kulturgeschichte des englischen Mittelalters vorlesungsbezogen behandelt: • Sprache: vertiefende Kenntnisse zu einzelnen Sprachperioden und Phänomenen; Einübung der Arbeit mit historischen Wörterbüchern und linguistischen Korpora; • Literatur und Kultur: je nach Vorlesungszyklus die Behandlung von Themen und Hauptwerken spezifischer Jahrhunderte; Beleuchtung wichtiger historischer Rahmenbedingungen, Arbeit am materiellen Text	2 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** DRINGEND EMPFOHLEN ABER NICHT VERPFLICHTEND VORAUSGESETZT wird die regelmäßige Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen **Examination requirements:** Semesterabhängig Sprachkenntnisse in unterschiedlichen Sprachstufen des Englischen; essayistische Auseinandersetzung mit spezifischen Fragen der Textinterpretation; Beherrschung grundlegender Methoden der literarischen und	4 C

materiellen Textanalyse und des historischen Sprachvergleichs; Grundkenntnisse zum kulturhistorischen Kontext spezifischer Sprachdenkmäler	

Admission requirements: B.Eng.601	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.603: Peer-Assisted Medieval English Studies**	7 C 4 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme sind die Studierenden in der Lage, • Individuelle Arbeit an vorlesungsbezogenen Forschungsthemen auszuführen und damit vorhandene Kenntnisse nachzuweisen und zu vertiefen • Feedback zum Forschungsprozess mithilfe regelmäßig geführter *Tutorials* anzunehmen und in die eigene Arbeit zu integrieren • den kritischen Dialog über Themen, Forschungsliteratur und Arbeitsschritte in kleinen Gruppen zu trainieren • Stilkompetenz im wissenschaftlichen Diskurs zu erwerben und eigene Standpunkte fundiert zu vertreten • Selbstkritisch mit den eigenen Forschungsresultaten umzugehen und Problemlösungstrategien im Team zu erarbeiten • eigenständig längere schriftliche Arbeiten zu Forschungsthemen unter Verwendung aller vorhandenen Ressourcen schrittweise zu entwickeln	**Workload:** Attendance time: 56 h Self-study time: 154 h

Course: Tutorial *Contents*: • Das *Tutorial* bietet die Möglichkeit, in kleinen Gruppen die eigenen schriftlichen Entwürfe unter Aufsicht kritisch zu diskutieren • Durch dezidierte Rückmeldung werden die Studierenden dazu befähigt, ihre schriftliche Ausarbeitung besser zu strukturieren und Strategien des wissenschaftlichen Arbeitens zu vertiefen	2 WLH
Course: Vorlesung (Lecture) *Contents*: Die Vorlesung bietet im semesterabhängigen Wechsel Überblicksdarstellungen zur mittelalterlichen Literatur Englands, zur historischen Sprachentwicklung des Englischen sowie zu ausgewählten Themen im Bereich der Paläographie, zu wichtigen Sprachdenkmälern und zur Kulturgeschichte des englischen Mittelalters	2 WLH
Examination: Term Paper (max. 5000 words) **Examination prerequisites:** regelmäßige Teilnahme; Essay (max. 2000 Wörter) **Examination requirements:** Verfassen eines ersten Entwurfs in Vorbereitung auf die Hausarbeit, kritische Reflektion; Anwendung erworbener Arbeitstechniken	7 C

Admission requirements: B.Eng.602	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Eng.631: Advanced Medieval English Studies**	6 C 2 WLH

Learning outcome, core skills: Kompetenzen: Studierende vertiefen v.a. ihre Methodenkompetenzen durch Erwerb von forschungsbasierten Fertigkeiten im fachwissenschaftlichen Umgang mit der Sprachgeschichte des Englischen sowie mit Texten in ihren literatur- und kulturhistorischen Zusammenhängen. Zentrale Inhalte: Forschungsorientierte fachwissenschaftliche Vertiefung im Teilfach "Mediävistik".	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Forschungsorientiertes Hauptseminar Mediävistik	2 WLH
Examination: Term Paper (max. 7500 words)	6 C

Examination requirements: sicherer Umgang mit Textformen und -gattungen, mit Methoden und Problemen der Analyse mittelalterlicher englischer Texte, historischer und gegenwärtiger Sprachformen des Englischen sowie mit relevanter Forschungsliteratur	

Admission requirements: B.Eng.603	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Eng.701: Introduction to English Language Teaching and Cultural Learning**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden • kennen fachdidaktische Grundlagen der schulischen Vermittlung sprachpraktischer Kenntnisse und Fähigkeiten (Wortschatz, Grammatik, Hör-, Seh- und Leseverstehen, Sprech- und Schreibvermögen); • kennen fremdsprachendidaktische Ansätze aus den Bereichen der Literatur-, Kultur- und Mediendidaktik; • kennen Lernziele des Fremdsprachenunterrichts sowie verschiedene Methoden und Medien zu ihrer Erreichung; • sind in der Lage, fremdsprachliche Lehr-Lern-Prozesse zu planen, anzuleiten und zu beurteilen; • kennen verschiedene Persönlichkeits- und Rollentheorien des Fremdsprachenlehrers bzw. der -lehrerin; • sind in der Lage, ihre professionsorientierte persönliche Entwicklung zu reflektieren; • kennen landeskundliche und interkulturelle Ansätze und Theorien und sind sich ihrer Bedeutung für das Lehren und Lernen einer fremden Sprache bewusst; • sind in der Lage, ihr Interaktionsverhalten hinsichtlich (inter)kultureller Faktoren zu planen, zu beobachten und zu reflektieren; • sind in der Lage, Mittlerfunktionen zwischen Personen unterschiedlicher Kulturen und Sprachen zu übernehmen; • entwickeln ein Bewusstsein für kulturelle Vielfalt als Ressource für Bildungsprozesse.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to English Language Teaching *Contents*: • theoretische Grundlagen der Fachdidaktik Englisch, • LehrerInnenrollen, LehrerInnenbilder, • Konzeption von fremdsprachlichen Unterrichtsprozessen, • Einsatzmöglichkeiten verschiedener Methoden und Medien und deren Reflexion, • schulische Vermittlung von Wortschatz, Grammatik, Hör-, Seh- und Leseverstehen, Sprech- und Schreibvermögen, • Grundlagen der Literatur-, Kultur- und Mediendidaktik, • Leistungsbeurteilung	2 WLH
Course: Tutorium *Contents*: • Nachbereitung und Vertiefung der Themen aus dem Seminar *Introduction to English Language Teaching* ,	1 WLH

• inhaltliche und methodische Planung und Durchführung einer Unterrichtsstunde *(Micro Teaching Unit)* zu einem der Themen aus dem Seminar, • Reflexion der unterrichtspraktischen Erfahrung Anmerkung: Proseminar und Tutorium müssen in einem Semester belegt werden.	
Examination: Portfolio (max. 6000 words) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen; Planung und Durchführung einer Micro Teaching Unit (MTU) **Examination requirements:** Die Studierenden weisen in der Modulprüfung nach, dass sie die fachdidaktischen Grundlagen der schulischen Vermittlung fremdsprachlicher Unterrichtsinhalte kennen sowie deren Relevanz für die Konzeption von fremdsprachlichen Unterrichtsprozessen reflektieren können; dass sie Grundkenntnisse über den Einsatz verschiedener Methoden und Medien im Fremdsprachenunterricht erworben haben; dass sie die Grundlagen der Fremdsprachendidaktik aus verschiedenen Perspektiven reflektieren können: aus der der Lernenden im Seminar, aus der Sicht von Lehrenden und aus der Sicht von SchülerInnen. Die Studierenden weisen außerdem nach, dass sie in der Lage sind, ihren eigenen Lernprozess auch im Hinblick auf interkulturelle Begegnungssituationen zu reflektieren und Konsequenzen für ihre eigene Unterrichtspraxis und Lehrpersönlichkeit abzuleiten. Sie zeigen, dass sie Kenntnisse von verschiedenen Persönlichkeits- und Rollentheorien als Fachlehrerin oder Fachlehrer erworben haben und diese reflektieren können.	6 C

Course: Introduction to Cultural Learning *Contents*: • Ansätze und Theorien von kulturellem Lernen, • Reflexion von interkulturellen Begegnungs- und Kommunikationssituationen Anmerkung: Es wird empfohlen, die Übung Introduction to Cultural Learning parallel zum Seminar Introduction to English Language Teaching zu belegen. Sie kann aber auch nach dem Besuch des Seminars und des Tutoriums erfolgen. Eine kurze schriftliche Reflexion (700-900 Wörter; 1,5-2 Seiten) ist Teil des Portfolios und geht mit einer Teilnote in die Bewertung des Portfolios ein.	1 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Carola Surkamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 43	

Additional notes and regulations:
Das Tutorium ist parallel zur Veranstaltung Introduction to English Language Teaching zu belegen. Die Veranstaltung Introduction to Intercultural Learning sollte ebenfalls parallel belegt werden, kann aber auch später absolviert werden.

Die Teilnahme an der Veranstaltung Introduction to Intercultural Learning ist separat in FlexNow nachzuweisen.

Georg-August-Universität Göttingen **Module B.Eng.702: Introduction to English Language Teaching (at Vocational Schools)**	4 C 3 WLH

Learning outcome, core skills: Die Studierenden • kennen fachdidaktische Grundlagen der schulischen Vermittlung sprachpraktischer Kenntnisse und Fähigkeiten (Wortschatz, Grammatik, Hör-, Seh- und Leseverstehen, Sprech- und Schreibvermögen); • kennen fremdsprachendidaktische Ansätze aus den Bereichen der Literatur-, Kultur- und Mediendidaktik; • kennen Lernziele des Fremdsprachenunterrichts sowie verschiedene Methoden und Medien zu ihrer Erreichung; • sind in der Lage, fremdsprachliche Lehr-Lern-Prozesse zu planen, anzuleiten und zu beurteilen; • kennen verschiedene Persönlichkeits- und Rollentheorien des Fremdsprachenlehrers bzw. der -lehrerin; • sind in der Lage, ihre professionsorientierte persönliche Entwicklung zu reflektieren; • kennen landeskundliche und interkulturelle Ansätze und Theorien und sind sich ihrer Bedeutung für das Lehren und Lernen einer fremden Sprache bewusst; • sind in der Lage, ihr Interaktionsverhalten hinsichtlich (inter)kultureller Faktoren zu planen, zu beobachten und zu reflektieren; • sind in der Lage, Mittlerfunktionen zwischen Personen unterschiedlicher Kulturen und Sprachen zu übernehmen; • entwickeln ein Bewusstsein für kulturelle Vielfalt als Ressource für Bildungsprozesse.	**Workload:** Attendance time: 42 h Self-study time: 78 h

Course: Lehrveranstaltung Introduction to English Language Teaching *Contents*: • theoretische Grundlagen der Fachdidaktik Englisch, • LehrerInnenrollen, LehrerInnenbilder, • Konzeption von fremdsprachlichen Unterrichtsprozessen, • Einsatzmöglichkeiten verschiedener Methoden und Medien und deren Reflexion, • schulische Vermittlung von Wortschatz, Grammatik, Hör-, Seh- und Leseverstehen, Sprech- und Schreibvermögen, • Grundlagen der Literatur-, Kultur- und Mediendidaktik, • Leistungsbeurteilung	2 WLH
Course: Tutorium *Contents*: • Nachbereitung und Vertiefung der Themen aus dem Seminar Introduction to English Language Teaching, • inhaltliche und methodische Planung und Durchführung einer	1 WLH

Unterrichtsstunde (Micro Teaching Unit) zu einem der Themen aus dem Seminar, • Reflexion der unterrichtspraktischen Erfahrung Anmerkung: Proseminar und Tutorium müssen in einem Semester belegt werden.	
Examination: Portfolio (max. 6000 words) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen; Planung und Durchführung einer Micro Teaching Unit (MTU) **Examination requirements:** Das Portfolio dient zur Reflexion des eigenen Lernprozesses. Die Studierenden weisen in der Modulprüfung nach, dass sie die fachdidaktischen Grundlagen der schulischen Vermittlung fremdsprachlicher Unterrichtsinhalte kennen sowie deren Relevanz für die Konzeption von fremdsprachlichen Unterrichtsprozessen reflektieren können; dass sie Grundkenntnisse über den Einsatz verschiedener Methoden und Medien im Fremdsprachenunterricht erworben haben; dass sie die Grundlagen der Fremdsprachendidaktik aus verschiedenen Perspektiven reflektieren können: aus der der Lernenden im Seminar, aus der Sicht von Lehrenden und aus der Sicht von SchülerInnen. Die Studierenden weisen außerdem nach, dass sie in der Lage sind, ihren eigenen Lernprozess zu reflektieren und Konsequenzen für ihre eigene Unterrichtspraxis und Lehrpersönlichkeit abzuleiten. Sie zeigen, dass sie Kenntnisse von verschiedenen Persönlichkeits- und Rollentheorien als Fachlehrerin oder Fachlehrer erworben haben und diese reflektieren können.	

Admission requirements: none	**Recommended previous knowledge:** B.Eng.101
Language: English	**Person responsible for module:** Prof. Dr. Carola Surkamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module B.Eng.771: Teaching English as a Foreign Language (for Students from Abroad)**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
Die Studierenden erwerben vertiefte fremdsprachendidaktische Kenntnisse. Sie zeigen, dass sie in der Lage sind, eine Verbindung von fachdidaktischen Theorien, Methoden und Fragestellungen mit fachwissenschaftlichen Inhalten und Theorien herzustellen. Sie zeigen, dass sie Theorien, Methoden und Erträge fachdidaktischer Forschung (historische und aktuelle Modelle der Sprach-, Literatur- und Kulturvermittlung, Medien- und Methodenkonzepte, Kompetenzmodelle, Steuerung von Lernprozessen, Leistungsfeststellung und -bewertung) kennen und in der Lage sind, diese kritisch zu reflektieren. Sie kennen Einsatzmöglichkeiten und Anpassungsnotwendigkeiten fachwissenschaftlichen Materials für Lehr-/Lernkontexte und sind in der Lage diese kritisch zu reflektieren.	Attendance time: 28 h Self-study time: 92 h

Course: Lehrveranstaltung zur Fachdidaktik des Englischen (Vertiefung)	2 WLH
Examination: Präsentation (ca. 30 Min.) mit Diskussionsleitung und schriftlicher Ausarbeitung (max. 2000 Wörter) **Examination prerequisites:** regelmäßige Teilnahme **Examination requirements:** - Präsentation und schriftliche Ausarbeitung dieser: Kenntnis der theoretischen Grundlagen; Fähigkeit zur Planung einer Unterrichtsstunde (inhaltlich, methodisch); Fähigkeit eine Unterrichtstunde durchzuführen; Fähigkeit diese in einen größeren Kontext (Unterrichtseinheit/-sequenz) einzubinden; Unterrichtsstunde auf der Basis fachdidaktischer theoretischer Grundlagen reflektieren; Verbindung zu fachwissenschaftlichem Inhalt herstellen und reflektieren; Nachweis der selbständigen wissenschaftlichen Bearbeitung eines Themas unter einer bestimmten Fragestellung - Diskussionsleitung: Moderation von Gesprächssitutationen (Vergleich zu späteren “Schulsituationen”, Fähigkeit zur kritischen inhaltlichen und methodischen Reflexion)	4 C

Admission requirements: none	**Recommended previous knowledge:** Grundlegende Kenntnisse zur Fremdsprachendidaktik
Language: English	**Person responsible for module:** Prof. Dr. Carola Surkamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Eng.802: Career-Oriented Internship**	6 C

Learning outcome, core skills: Die Studierenden können Kenntnisse und Techniken aus dem Studium im Fach Englisch/ELLC im Rahmen eines fachnach gewählten Praktikum (Erwachsenenbildung, Museum, Firma/Betrieb, Zeitung/Zeitschrift, Online) anwenden. Sie können den Prozess, ihre Erkenntnisse sowie die eingesetzten Methoden reflektieren. Sie verfügen über einen geeigneten theoretisch-methodischen Bezugsrahmen und können diesen darstellen.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Praxisteil: Praktikum (120 Stunden) *Contents*: mit Blick auf Fachnähe gewähltes Praktikum in einem Betrieb, einer Institution, einer Organisation	
Examination: Internship report (max. 12 pages), not graded	6 C

Examination requirements: Studierende können die während eines Praktikums erworbenen berufsorientierenden Kenntnisse und Erfahrungen reflektieren. Sie können ihre Erfahrungen in einen geeigneten theoretisch-methodischen Bezugsrahmen stellen.	

Admission requirements: Teilnahme an einem Beratungsgespräch zu Praktikumsbereichen; erfolgreiche Bewerbung als PraktikantIn	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: each semester1	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 10	

Additional notes and regulations:
Das Modul kann nicht parallel zu B.Eng.813 "Perspektiven der Literatur- und Kulturindustrie" belegt werden.

Georg-August-Universität Göttingen **Module B.Inf.1204: Telematics / Computer Networks**	5 C 3 WLH

Learning outcome, core skills: The students • know the core principles and concepts of computer networks. • know the principle of layering and the coherences and differences between the layers of the internet protocol stack. • know the properties of protocols that are used for data forwarding in wired and wireless networks. They are able to analyse and compare these protocols. • know details of the internet protocol. • know the different kinds of routing protocols, both in the intra-domain and inter-domain level. They are able to apply, analyse and compare these protocols. • know the differences between transport layer protocols as well as their commonalities. They are able to use the correct protocol based on the demands of an application. • know the principles of Quality-of-Service infrastructures and networked multimedia • know the basics of both symmetric and asymmetric encryption with regards to network security. They know the various advantages and disadvantages of each kind of encryption when compared to each other and can apply the correct encryption method based on application demands.	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Computernetworks (Lecture,Exercise)	3 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Layering; ethernet; forwarding in wired and wireless networks; IPv4 and IPv6; inter-domain and intra-domain routing protocols; transport layer protocols; congestion control; flow control; Quality-of-Service infrastructures; asymmetric and symmetric cryptography	5 C

Admission requirements: none	**Recommended previous knowledge:** B.Inf.1101, B.Inf.1801
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Inf.1236: Machine Learning**	6 C 4 WLH

Learning outcome, core skills: Students • learn concepts and techniques of machine learning and understand their advantages and disadvantages compared with alternative approaches • learn techniques of supervised learning for classification and regression • learn techniques of unsupervised learning for density estimation, dimensionality reduction and clustering • implement machine learning algorithms like linear regression, logistic regression, kernel methods, tree-based methods, neural networks, principal component analysis, k-means and Gaussian mixture models • solve practical data science problems using machine learning methods	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Machine Learning (Lecture) Bishop: Pattern recognition and machine learning. https://cs.ugoe.de/prml	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** B.Inf.1236.Ex: At least 50% of homework exercises solved and N-1 attempts presented to tutors **Examination requirements:** Knowledge of the working principles, advantages and disadvantages of the machine learning methods covered in the lecture	6 C

Course: Machine Learning - Exercise (Exercise) *Contents*: Students present their solutions of the homework exercises to tutors and discuss them with their tutors.	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Knowledge of basic linear algebra and probability English language proficiency at level B2 (CEFR)
Language: English	**Person responsible for module:** Prof. Dr. Alexander Ecker
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Inf.1237: Deep Learning for Computer Vision**	6 C 4 WLH

Learning outcome, core skills: Students • learn concepts and techniques of deep learning and understand their advantages and disadvantages compared to alternative approaches • learn to solve practical data science problems using deep learning • implement deep learning techniques like multi-layer perceptrons, convolutional neural networks and other modern deep learning architectures • learn techniques for optimization and regularization of deep neural networks • learn applications of deep neural networks for computer vision tasks such as segmentation and object detection	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Deep Learning for Computer Vision (Lecture) Goodfellow, Bengio, Courville: Deep Learning. https://www.deeplearningbook.org Bishop: Pattern Recognition and Machine Learning. https://cs.ugoe.de/prml	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** B.Inf.1237.Ex: At least 50% of homework exercises solved and N-1 attempts presented to tutors **Examination requirements:** Knowledge of basic deep learning techniques, their advantages and disadvantages and approaches to optimization and regularization. Ability to implement these techniques.	6 C

Course: Deep Learning for Computer Vision - Exercise (Exercise) *Contents*: Students present their solutions of the homework exercises to tutors and discuss them with their tutors.	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of linear algebra and probability Completion of B.Inf.1236 Machine Learning or equivalent
Language: English	**Person responsible for module:** Prof. Dr. Constantin Pape Prof. Dr. Alexander Ecker
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Inf.1238: Informetrics**	5 C 4 WLH

Learning outcome, core skills: Students • learn concepts and techniques of informetric analysis • learn concepts of empirical laws in scientific literature analytics • learn basics of Bradford law, Lotka law, Zipf law and other related rank-order distributions • analyse informetric distributions like Lotka law in real-life literature databases • implement informetric techniques • learn to recognise informetric laws	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Introduction to Informetrics (Lecture,Exercise) Wilson, C.S. (1999). Informetrics. Annual Review of Information Science and Technology (ARIST), 34, 107-247	4 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** At least 50% of homework exercises solved. **Examination requirements:** • Knowledge of informetric techniques and basic informetric laws • Knowledge of basic literature analytics • Ability to implement these techniques	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Philipp Mayr-Schlegel
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Inf.1239: Digital Repositories**	5 C 4 WLH

Learning outcome, core skills: Students • learn concepts and functionalities of Digital Repositories (like Digital Libraries or other types of scientific document collections) • analyse different types of content in Digital Repositories (like scholarly literature full-texts, datasets, etc.) • learn how to automatically process content from Digital Repositories • implement content processing pipelines (like cleaning, aggregating) • implement simple bibliometric analyses • learn to interpret data	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Introduction to Digital Repositories (Lecture,Exercise) Edward A. Fox, Robert M. Akscyn, Richard K. Furuta, and John J. Leggett. 1995. Digital libraries. Commun. ACM 38, 4, 22–28	4 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** At least 50% of homework exercises solved. **Examination requirements:** • Knowledge of concepts and content in typically state-of-the-art Digital Repositories • Knowledge of basic content processing techniques • Ability to implement these techniques • Ability to interpret output from these techniques	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic understanding of relational databases
Language: English	**Person responsible for module:** Dr. Philipp Mayr-Schlegel
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Inf.1240: Visualization**	6 C 4 WLH

Learning outcome, core skills: Knowledge of • the potentials and limitations of data visualization • the fundamentals of visual perception and cognition and their implications for data visualization. Students can apply these to the design of visualizations and detect manipulative design choices • a broad variety of techniques for visual representation of data, including abstract and high-dimensional data. Students can select appropriate methods on new problems • integration of visualization into the data analysis process, algorithmic generation and interactive methods	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Visualization (Lecture,Exercise)	4 WLH
Examination: Practical project (2-3 weeks) with presentation and questions during oral exam in groups (approx. 20 minutes per examinee). **Examination prerequisites:** At least 50% of homework exercises solved. **Examination requirements:** Knowledge of potentials and limitations of data visualization, fundamentals of visual perception and their implications for good design choices, techniques for visual representation and how to use them.	6 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of linear algebra and analysis (e.g. B.Mat.0801 and B.Mat.0802) and programming skills (e.g. B.Inf.1842).
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Schmitzer
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Inf.1241: Computational Optimal Transport**	6 C 4 WLH

Learning outcome, core skills: Knowledge of • the fundamental notions of optimal transport, and its strengths and limitations as a data analysis tool • the discrete Kantorovich formulation, its convex duality, and Wasserstein distances • classical numerical algorithms, entropic regularization, and their scopes of applicability • examples for data analysis applications. Students can transfer these to new potential applications	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Computational Optimal Transport (Lecture,Exercise)	4 WLH
Examination: Written exam (90 minutes) or oral exam (approx. 20 minutes) **Examination prerequisites:** At least 50% of homework exercises solved. **Examination requirements:** Knowledge of Kantorovich duality, Wasserstein distances, standard algorithms and implications for data analysis applications.	6 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of linear algebra and analysis (e.g. B.Mat.0801 and B.Mat.0802) and programming skills (e.g. B.Inf.1842).
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Schmitzer
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Inf.1709: Advanced Algorithms and Data Structures**	5 C 4 WLH

Learning outcome, core skills: Die Studierenden haben vertiefte Kenntnisse und Kompetenzen auf einem Gebiet aus dem Bereich Algorithmen und Datenstrukturen erworben. Beispiele für solche Gebiete sind Algorithms on Sequences und Advanced Topics on Algorithms.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Algorithms on Sequences (Lecture,Exercise) *Contents*: This course is an introduction into the theory of stringology, or algorithms on sequences of symbols (also called words or strings). Our main intention is to present a series of basic algorithmic and combinatorial results, which can be used to develop efficient word-processing tools. While the emphasis of the course is on the theoretical side of stringology, we also present a series of applications of the presented concepts in areas like data-compression or computational biology. We expect that the participants to this course will gain an understanding of classical string-processing tools. They are supposed to understand and be able to use in various situations: classical text algorithms (e.g., pattern matching algorithms, edit distance), classical text indexing data structures (e.g., suffix arrays / trees), and classical combinatorial results that are useful in this context (e.g., periodicity lemmas). The main topics our course will cover are: basic combinatorics on words, pattern matching algorithms, data structures for text indexing (suffix arrays, suffix trees), text compression (Huffman encoding, Lempel-Ziv method), detection of regularities in words, algorithms for words with don't care symbols (partial words), word distance algorithms, longest common subsequence algorithms, approximate pattern matching. The presentation of each theoretical topic from the above will be accompanied by a brief discussion on its possible applications. Literature • T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein: Introduction to Algorithms (3rd Edition), MIT Press, 2009. • M. Crochemore, C. Hancart, T. Lecroq: Algorithms on Strings, Cambridge University Press, 2007. • M. Crochemore, W. Rytter: Jewels of Stringology, World Scientific, 2002. • D. Gusfield. Algorithms on strings, trees, and sequences: computer science and computational biology. Cambridge University Press, 1997. *Course frequency:* irregular	4 WLH
Course: Advanced Topics on Algorithms (Lecture,Exercise) *Contents*: In this course we present a series of selected results on data structures and efficient algorithms, and discuss a series of areas in which they can be applied successfully. The emphasis of the course is on the theory, we also approach the problem of a practical implementation of the presented algorithms.	4 WLH

We expect that the students that will participate in this lecture will become familiar with efficient sorting and searching methods, advanced data structures, dynamic data structures, as well as other efficient algorithmic methods, they will be able to estimate the complexity of those algorithms, and they will be able to apply those algorithms to particular programming problems (from practical or theoretical settings). The main topics our course will cover are: efficient sorting and searching (non-comparison based methods, van Emde Boas trees, Radix Sort), advanced tree-structures (Fibonacci heaps, B-Trees, structures for working with disjoint sets), dynamic data structures (range minimum queries, lowest common ancestor, applications to string algorithms: suffix arrays, suffix trees), Hashing and Dictionaries, Young tableaux, geometric algorithms (convex hull), number theoretic algorithms. The presentation of each theoretical topic from the above will be accompanied by a brief discussion on its possible applications. Literature • T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein: Introduction to Algorithms (3rd Edition), MIT Press, 2009. • E. Demaine: Advanced Data Structures, MIT Course nr. 6.851, 2012. • Pawel Gawrychowski and Mayank Goswami and Patrick Nicholson: Efficient Data Structures, MPI Course, Summer 2014. *Course frequency:* irregular	
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Algorithms on Sequences • basic combinatorics on words • pattern matching algorithms • data structures for text indexing (suffix arrays, suffix trees) • text compression (Huffman encoding, Lempel-Ziv method) • detection of regularities in words • algorithms for words with don't care symbols (partial words) • word distance algorithms • longest common subsequence algorithms • approximate pattern matching Advanced Topics on Algorithms • efficient sorting and searching (non-comparison based methods, van Emde Boas trees, Radix Sort) • advanced tree-structures (Fibonacci heaps, B-Trees, structures for working with disjoint sets) • dynamic data structures (range minimum queries, lowest common ancestor, applications to string algorithms: suffix arrays, suffix trees) • Hashing and Dictionaries • Young tableaux • geometric algorithms (convex hull) • number theoretic algorithms	5 C

Examination requirements:	

Admission requirements: none	**Recommended previous knowledge:** B.Inf.1101, B.Inf.1103
Language: English	**Person responsible for module:** Prof. Dr. Florin-Silviu Manea
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Inf.1710: Advanced Computer Security and Privacy**	5 C 4 WLH

Learning outcome, core skills: Die Studierenden haben vertiefte Kenntnisse und Kompetenzen auf einem Gebiet aus dem Bereich Computersicherheit und Privatheit erworben. Beispiele für solche Gebiete sind "Usable Security and Privacy" und "Privacy in Ubiquitous Computing".	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Usable Security and Privacy (Lecture,Exercise) On completion of the lecture, students should be able to: • Understand the needs for usability in secure and privacy-preserving solutions and the associated challenges, • Present and discuss selected themes addressed in the research area of usable security and privacy, • Define and understand the principles and guidelines to apply when designing new solutions, • Describe and compare different methodologies to conduct user studies, • Plan user studies from their design to the processing and presentation of the results. *Course frequency:* irregular	4 WLH
Course: Privacy in Ubiquitous Computing (Lecture,Exercise) *Contents*: After successful completion of the lecture, students are able to: • Define and understand the key concepts of privacy and ubiquitous computing, • Identify and classify threats to privacy in ubiquitous computing, • Describe, compare, and choose fundamental techniques to protect privacy, • Understand and analyze cutting-edge solutions. *Course frequency:* irregular	4 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination requirements:** Usable Security and Privacy • Introduction to usable security and privacy, selected topics in the research field of usable security and privacy, human-computer interaction principles and guidelines, methods to design and evaluate usable solutions in the area of security and privacy. Privacy in Ubiquitous Computing • Introduction to privacy and ubiquitous computing, privacy threats, privacy-enhancing technologies, wireless sensor networks, smart meters, participatory sensing, RFIDs, Internet-of-Things.	5 C

Examination requirements:	

Admission requirements: none	**Recommended previous knowledge:** B.Inf.1101, B.Inf.1210
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Inf.1711: Advanced Sensor Data Processing**	5 C 4 WLH

Learning outcome, core skills: Die Studierenden haben vertiefte Kenntnisse und Kompetenzen auf einem Gebiet aus dem Bereich Sensordatenverarbeitung erworben. Beispiele für solche Gebiete sind "Sensor Data Fusion" und "Mobile Robotics".	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Sensor Data Fusion (Lecture,Exercise) *Contents*: This lecture is concerned with fundamental principles and algorithms for the processing and fusion of noisy (sensor) data. Applications in the context of navigation, object tracking, sensor networks, robotics, Internet-of-Things, and data science are discussed. After completion, students are able to • define the notion of data fusion and distinguish different data fusion levels • formalize data fusion problems as state estimation problems • develop distributed and decentralized data fusion architectures • describe the basic concepts of linear estimation theory • explain the fundamental formulas for the fusion of noisy data • deal with unknown correlations in data fusion • understand the Bayesian approach to data fusion and estimation • formulate dynamic models for time-varying phenomena • describe the concept of a recursive Bayesian state estimator • explain and apply the Kalman filter for state estimation in dynamic systems • explain and apply basic nonlinear estimation techniques such as the Extended Kalman filter (EKF) and Unscented Kalman filter (UKF) • assess the properties, advantages, and disadvantages of the discussed (nonlinear) estimators • explain different approaches to deal with uncertainty such as probability theory, fuzzy theory, and Dempster–Shafer theory • identify data fusion applications and assess the benefits of data fusion *Course frequency:* irregular	4 WLH
Course: Mobile Robotics (Lecture,Exercise) *Contents*: This lecture is concerned with fundamental principles and algorithms for mobile robot navigation and perception. After completion, the students are able to • model the locomotion of wheeled mobile robots • understand the concept of dead reckoning • describe the most common sensors for mobile robots, e.g., inertial sensors and beam-based sensors • employ probabilistic state estimation methods such as Kalman filters and sequential Monte Carlo methods (particle filters) for robot navigation and perception	4 WLH

• describe and distinguish different concepts for localization such as trilateration and triangulation • implement and evaluate basic algorithms for localization • understand the robot mapping problem and explain different map representations such as occupancy grids • describe the problem of Simultaneous Localization and Mapping (SLAM) • implement and evaluate basic algorithms for SLAM such as graph-based approaches and Rao-Blackwellized particle filters • implement and evaluate basic feature extraction methods such as Random Sample Consensus (RANSAC) • design basic planning algorithms for mobile robots using, e.g., a Markov Decision Process (MDP) *Course frequency:* irregular	
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination requirements:** Sensor Data Fusion • Definition of data fusion; data fusion levels; formalization of data fusion problems; distributed and decentralized fusion architectures; linear estimation theory; fundamental fusion formulas; dynamic state estimation; Kalman filter; Extended Kalman filter (EKF); Unscented Kalman filter (UKF), algorithms for dealing with unknown correlations; fuzzy theory; Dempster-Shafer theory Mobile Robotics • Motion models for wheeled robots; dead reckoning; mobile robot sensors; Kalman filter; particle filter; localization concepts and algorithms; robot mapping; Simultaneous Localization and Mapping (SLAM); feature extraction methods; planning algorithms	5 C

Examination requirements:	

Admission requirements: none	**Recommended previous knowledge:** B.Inf.1101, B.Inf.1211
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Inf.1904: Introduction to Computational Linguistics and Natural Language Processing**	6 C 4 WLH

Learning outcome, core skills: A successful completion of the module enables the participants to: • describe typical language analysis tasks • illustrate suitable methods for different language analysis tasks • apply elementary language analysis algorithms • compare the advantages and disadvantages of different methods • sketch methods for measuring the quality of data annotation performed by humans and algorithms • construct complex problem solving pipelines (data selection, annotation, analysis and evaluation of the results) • select suitable algorithms for specific application scenarios	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to Computational Linguistics and Natural Language Processing (Lecture,Exercise) *Contents*: The course provides an overview of the main tasks and challenges in computational linguistics and natural language processing. Students are introduced to standard algorithms for analysing natural language, covering the areas lexicon, syntax, semantics and discourse. The course highlights the underlying assumptions and strategies of different methods as well as their advantages and disadvantages in different application scenarios. The students learn to develop approaches for solving text and language processing tasks, taking into account data selection, annotation, analysis and evaluation of the results.	4 WLH
Examination: Written exam (90 minutes) or oral exam (20 minutes) **Examination prerequisites:** Participation in the exercise **Examination requirements:** The students demonstrate knowledge of specific computational linguistic tasks, methods and research results and are able to understand and reflect to some extent on methods and theories in computational linguistics. They are able to: • describe typical language analysis tasks • illustrate suitable methods for different analysis tasks • apply elementary language analysis algorithms • compare the advantages and disadvantages of different methods • select suitable algorithms for specific application scenarios	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Caroline Sporleder

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Mat.0732: Practical course in scientific computing: Basics**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** After successfully completing the module, students have basic practical experience in scientific computing. They • are able to carry out programming projects in individual and group work; • have solid programming skills; • are proficient in the use of an integrated development environment; • are able to version projects using a version control system; • have mastered some basic procedures for the numerical solution of mathematical problems. **Core skills:** After successfully completing the module, students will be able to • structure programming tasks in such a way that they can be completed efficiently in group work; • develop and document a programming project in an understandable way; • use a version control system; • implement mathematical algorithms and procedures in a programming language or user system	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Practical course in scientific computing: Basics (Course)	2 WLH
Examination: Portfolio as a versioned programming project (max. 15 pages without attachments)	3 C

Examination requirements: Students are able to apply mathematical knowledge to programming tasks. They can structure these programming tasks in such a way that efficient collaboration in groups is established. They will be able to develop and document these programming tasks in a structured manner, including with the help of version control systems.	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1013
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 3 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Institute of Numerical and Applied Mathematics

Georg-August-Universität Göttingen **Module B.Mat.0733: Practical course in scientific computing: Extensions**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** This module builds on the course B.Mat.0732 "Practical course in scientific computing: Basics", in which practical foundations of scientific computing are laid. After successfully completing the module, students have basic practical experience in scientific computing. They • are able to create programming projects in individual and group work; • have solid programming skills; • are proficient in the use of an integrated development environment; • are able to version projects using a version control system; • have mastered some basic procedures for the numerical solution of mathematical problems; • are able to ensure the quality and reliability of code through testing; • are proficient in working with environments to develop and deploy applications consistently. • have basic knowledge of automation in software development. **Core skills:** After successfully completing the module, students will be able to • structure programming tasks in such a way that they can be completed efficiently in group work; • develop and document a programming project in an understandable way; • use a version control system; • implement mathematical algorithms and procedures in a programming language or user system; • ensure the reliability of code in an automated way; • provide a programming project in an efficient and user-friendly way.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Practical course in scientific computing: Basics and extensions (Course)	2 WLH
Examination: Portfolio as a versioned programming project (max. 35 pages without attachments)	3 C

Examination requirements: Students are able to apply the mathematical knowledge they have acquired during their studies to practical tasks. They can design programming tasks in such a way that efficient and structured processing is established. They can develop and document their own project and manage it using version control systems. In addition, they are able to implement mathematical algorithms and procedures in code and critically reflect on the results in terms of subject content.	

Admission requirements:	**Recommended previous knowledge:**

none	B.Mat.0732, B.Mat.1013
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:

- **Instructor:** Lecturers at the Institute of Numerical and Applied Mathematics
- **Exclusions:** Only one of the courses B.Mat.0733, B.Mat.0736 and B.Mat.0739 can be taken.

Georg-August-Universität Göttingen **Module B.Mat.0736: Practical course in scientific computing: Advanced extensions**	6 C 2 WLH

Learning outcome, core skills:
Learning outcome:

This module builds on the course B.Mat.0732 "Practical course in scientific computing: Basics", in which practical foundations of scientific computing are laid. After successfully completing the module, students have basic practical experience in scientific computing. They

- are able to create programming projects in individual and group work;
- have solid programming skills;
- are proficient in the use of an integrated development environment;
- are able to version projects using a version control system;
- have mastered some basic procedures for the numerical solution of mathematical problems.
- are able to ensure the quality and reliability of code through testing;
- are proficient in working with environments to develop and deploy applications consistently;
- have basic knowledge of automation in software development;
- are able to apply techniques to parallelise tasks or use GPU computing to accelerate calculations;
- can carry out performance profiling and implement strategies to optimise memory consumption;
- master the optimisation of algorithms to improve efficiency in software development.

Core skills:

After successfully completing the module, students will be able to

- structure programming tasks in such a way that they can be completed efficiently in group work;
- develop and document a programming project in an understandable way;
- use a version control system;
- implement mathematical algorithms and procedures in a programming language or user system;
- ensure the reliability of code in an automated way;
- provide a programming project in an efficient and user-friendly way;
- identify mathematical problems in application questions independently and convert them into a mathematical model;
- convert complex mathematical problems into a series of simple programming tasks in order to solve them independently;
- independently analyse and present questions in the field of scientific computing.

Workload:
Attendance time: 28 h
Self-study time: 152 h

Course: Practical course in scientific computing: Basics and advanced extensions (Course)	2 WLH

Examination: Portfolio as a versioned programming project (max. 45 pages without attachments) **Examination prerequisites:** Oral presentation (approx. 45 minutes)	6 C

Examination requirements: Students are able to apply the mathematical knowledge they have acquired during their studies to complex practical tasks. They can design programming tasks in such a way that efficient and structured processing is guaranteed. They can develop and document their own project and manage it using version control systems. In addition, they are able to implement mathematical algorithms and procedures in code and critically reflect on their approach. Students will also be able to present the methods and tools used in an understandable and structured way.

Admission requirements: none	**Recommended previous knowledge:** B.Mat.0732, B.Mat.1013
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:

- **Instructor:** Lecturers at the Institute of Numerical and Applied Mathematics
- **Exclusions:** Only one of the courses B.Mat.0733, B.Mat.0736 and B.Mat.0739 can be taken.

Georg-August-Universität Göttingen **Module B.Mat.0922: Mathematics information services and electronic publishing**	3 C (incl. key comp.: 3 C) 2 WLH

Learning outcome, core skills: **Learning outcome:** After having successfully completed the module, students are familiar with the basics of mathematics information services and electronic publishing. They • work with popular information services in mathematics and with conventional, non-electronic as well as electronic media; • know a broad spectrum of mathematical information sources including classification principles and the role of meta data; • are familiar with current development in the area of electronic publishing in the subject mathematics. **Core skills:** After successfull completion of the module students have acquired subject-specific information competencies. They • have suitable research skills; • are familiar with different information and specific publication services.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture course (Lecture) *Contents*: Lecture course with project report	
Examination: Written examination (90 minutes), not graded **Examination prerequisites:** Regular participation in the course	3 C

Examination requirements: Application of the acquired skills in individual projects in the area of mathematical information services and electronic publishing	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 1 - 6; Master: 1 - 4; Promotion: 1 - 6
Maximum number of students: not limited	

Additional notes and regulations:

Instructors: Lecturers at the Mathematical Institute

Georg-August-Universität Göttingen **Module B.Mat.0923: Scientific Writing**	3 C (incl. key comp.: 3 C) 2 WLH

Learning outcome, core skills: **Learning outcome:** After having successfully completed the module, students are familiar with the basics of scientific writing. Objectives: • How to start; motivation for writing a paper (thesis, term paper, seminar presentation, conference talk); choice of language (German/English/?); when to start; support resources. • Different text types in the professional carreer, e.g. motivation letter, research report, technical report, proposal etc. • Plagiarism; different types of plagiarism, unintentional and intentional plagiarism; how to avoid and recognise plagiarism? How to avoid being accused of plagiarism? • Planning and execution, structure, overall style of language, clear and concise writing, writing problems and how to avoid them, cultural sensitivity, cultural transferability. • Discussion; purpose, content, tense, structure; introducing tense, voice and mood; introducing modular writing and why it helps. • Methods; purpose, content (Bishop report implications), tense, structure. • Results; purpose, content, tense, structure; what goes in figures, images and tables; effective placing and citation of figures, images, tables; warning on image manipulation. • Introduction; purpose, content, tense, structure. • Title, abstract, key words, search engine optimization, list of references, acknowledgements. • Optionally, choosing a journal, text matching, predatory & trick journals, your audience, factors affecting choice, scope, impact factors, open access. • Optionally, ethics of publication, COPE, Vancouver rules and other bodies, authorship, author order, contributorship statements, coauthors, corresponding authors, chaperones, grievance procedures. **Core skills:** After successfull completion of the module students have acquired subject-specific competencies in scientific writing. They • have suitable research skills; • are familiar with how to find and discuss a topic academically and using academic terms and methodology.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture course (Lecture) *Contents*: Lecture course with project report	2 WLH

Examination: Term Paper (max. 15 pages), not graded	3 C

Examination requirements: Application of the acquired skills in individual projects in the area of mathematical information services and electronic publishing

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 1 - 6; Master: 1 - 4; Promotion: 1 - 6
Maximum number of students: not limited	

Additional notes and regulations: **Instructors:** Lecturers at the Mathematical Institute

Georg-August-Universität Göttingen **Module B.Mat.3010: Analysis on manifolds**	9 C 6 WLH

Learning outcome, core skills: **Learning outcome:** Upon successful completion of the module, students will be familiar with the following fundamental concepts and methods of analysis on manifolds: • Tangent space, vector field (also time-dependent), integral curve, commutator of vector fields, vector bundle; • ocal existence and uniqueness theorem, continuous and C^k-dependence on initial value for ordinary differential equations, flow of a vector field; • Algebra of differential forms and graded commutativity, pullback and its properties, integral of a differential form, de Rham differential, Lie derivative; • Manifolds, tangent and cotangent bundle, submanifolds, distributions and Frobenius' Theorem; • Orientation, Stokes' Theorem, classical 2- and 3-dimensional integral theorems, de Rham cohomology; • Critical points, Sard's Theorem, Morse theory; • Decomposition of the unit, vector bundle; • Introduction to Lie groups and Lie algebras, examples, group actions; • Transversality, mapping degree, intersection index. **Core skills:** Upon successful completion of the module, students will be able to: • Master the ways of thinking and proof techniques of the theory, apply theorems; • Solve examples of ordinary differential equations (linear systems with constant coefficients, etc.); • Handle calculations with differential forms and vector fields (properties of the de Rham differential, Cartan formula, Lie derivative of vector fields and commutator, etc.); • Use examples of manifolds (real and complex Grassmannians, 2-dimensional, etc.), define submanifolds by regular value theorem; • Find critical points with their invariants; • Recognize and analyze the actions of matrix Lie groups (fundamental vector field, stabilizers, etc.).	**Workload:** Attendance time: 84 h Self-study time: 186 h

Course: Analysis on manifolds (Lecture)	4 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3010.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	9 C

Course: Analysis on manifolds - exercises (Exercise)	2 WLH

Examination requirements:	

Proof of knowledge of analysis on manifolds	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.0021, B.Mat.0022
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Mathematical Institute

Georg-August-Universität Göttingen **Module B.Mat.3011: Functional analysis and spectral theory**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** After successfully completing the module, students are familiar with functional-analytic thinking and know the central concepts and results of the field. They have the relevant knowledge on the following topics: • Banach algebras and spectral theory: Banach-Mazur Theorem, maximal ideal space, Gelfand representation theorem, spectrum, holomorphic functional calculus; • C*-algebras: C*-norms, Gelfand-Naimark theorem, GNS construction, positivity, automatic continuity; • Spectral theorem for (unbounded) normal operators on Hilbert space, three variants: via spectral measures, functional calculus, and multiplication operators, proof for selfadjoint operators, applications in mathematical physics; • Fréchet spaces, the basic functional-analytic principles continue to hold in them; • Distributions and the Fourier transform: tempered distributions, operations on distributions, homogeneous distributions, the Fourier transform, convolutions, fundamental solutions for constant-coefficient differential operators, Laplace, Cauchy-Riemann, heat, and wave operators as examples. **Core skills:** After successfully completing the module, students are able to • work in infinite-dimensional spaces and argue geometrically there; • reduce or translate problems from other areas of mathematics into functional-analytic ones; • understand the importance and use of functional-analytic concepts such as completeness, boundedness, and compactness.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Functional analysis and spectral theory (Lecture)	3 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3011.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	6 C

Course: Functional analysis and spectral theory - exercises (Exercise)	1 WLH

Examination requirements: Proof of knowledge in functional analysis and spectral theory.	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.0021, B.Mat.0022, B.Mat.1021
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency:	**Duration:**

each winter semester	1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Mathematical Institute

Georg-August-Universität Göttingen **Module B.Mat.3012: Introduction to topology**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** After successfully passing the module the students are familiar with topological ways of thinking and know the central concepts and results of the area. They know the basics of (set theoretic) topology, in particular they • have fully grasped the concept of topological spaces; • know basic constructions like quotient topologies; • use topological constructions like simplicial complexes; • are familiar with concept of homotopy and its applications; • have a working knowledge of (co)homology of simplicial complexes; • use concrete and abstract models of covering theory and the fundamental group; • are familiar with the basic ideas of topological data analysis. **Core skills:** After successfully passing the module the students are capable to • compute and apply topological invariants like the fundamental groups; • analyze mathematical problems and argue using a topological way of thinking; • model geometric situations with topological tools like simplicial complexes; • can formulate problems using appropriate topological language and analyze and solve them with topological methods.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to topology (Lecture)	3 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3012.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	6 C

Course: Introduction to topology - exercises (Exercise)	1 WLH

Examination requirements: Proof of basic knowledge in algebraic topology	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.0021, B.Mat.0022, B.Mat.1021
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students:	

not limited	

Additional notes and regulations:
Instructor: Lecturers at the Mathematical Institute

Georg-August-Universität Göttingen **Module B.Mat.3030: Numerical linear algebra for data science**	9 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successfully completing the module, students will be familiar with analysing numerical methods of linear algebra, in particular with regard to stability, efficiency and applicability to data science problems. The module builds on the courses "Numerics and optimisation I/II", whose first part already covers linear systems of equations and direct solution methods. The focus of this module is on advanced topics and their applications in data science. Following the course students • will have a better understanding of the importance of eigenvalues and singular values of linear mappings, especially in the context of data science; • know efficient numerical methods for the numerical calculation of these and can apply and analyse them; • know how to solve large linear least squares problems efficiently. **Core skills:** Students will develop fundamental skills in numerical linear algebra and its application in data science. They • are able to identify problems from data science as problems of (numerical) linear algebra and apply tools of numerical analysis to them; • are able to apply numerical methods to solve linear systems of equations, fitting problems or eigenvalue problems; • analyse their computational complexity, stability and suitability for large data sets.	**Workload:** Attendance time: 84 h Self-study time: 186 h

Course: Numerical linear algebra for data science (Lecture)	4 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3030.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	9 C

Course: Numerical linear algebra for data science - exercises (Exercise)	2 WLH

Examination requirements: Proof of advanced knowledge in numerical linear algebra for data science	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1023
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency:	**Duration:**

each winter semester	1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Institute of Numerical and Applied Mathematics

Georg-August-Universität Göttingen **Module B.Mat.3032: Numerics of ordinary differential equations**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** After successfully completing the module, students are familiar with analysing ordinary differential equations, in particular with regard to the existence, uniqueness and stability of solutions and basic numerical methods for solving them. They • learn the basics of the theory of initial value problems;become familiar with numerical methods for the numerical solution of initial value problems and deal with the error analysis of the methods; • know the concept of stiffness as well as the necessity and examples of implicit integrators; • analyse geometric integrators and their properties; • discuss the theory of boundary value problems in one space dimension and analyse their solution with finite differences. **Core skills:** Students develop basic competences in the numerics of differential equations. They: • analyse the well-posedness of differential equations and systems of differential equations; • analyse errors in numerical integrators; in particular, they can analyse the consistency and stability of these; • are able to apply numerical differential equation solvers to differential equations and systems of differential equations; • analyse numerical methods in terms of their complexity and suitability for different types of differential equations; • implement and analyse numerical algorithms for selected problems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Numerics of ordinary differential equations (Lecture)	3 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3032.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	6 C

Course: Numerics of ordinary differential equations - exercises (Exercise)	1 WLH

Examination requirements: Proof of knowledge of numerics of ordinary differential equations	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1023
Language:	**Person responsible for module:**

English	Dean of studies mathematics
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Institute of Numerical and Applied Mathematics

Georg-August-Universität Göttingen **Module B.Mat.3033: Numerical and applied mathematics**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** After successfully completing the module, students are familiar with advanced concepts of numerical and applied mathematics. They • acquire sound knowledge of mathematical modelling of real problems, the development of numerical algorithms and their theoretical and practical analysis, in particular they • learn methods for modelling complex systems and their numerical solution techniques; • analyse the efficiency, stability and convergence of numerical methods; • know modern algorithms and analyse their application to current problems in science and technology **Core skills:** Students develop essential skills in numerical and applied mathematics. They: • master advanced techniques of mathematical modelling and their implementation in numerical methods; • analyse numerical algorithms with regard to their accuracy, stability and computational complexity; • evaluate and optimise numerical methods for real applications; • implement numerical algorithms and test their performance on practical problems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Numerical and applied mathematics (Lecture)	3 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** B.Mat.3033.Ue: Achievement of at least 50% of the exercise points as well as committed participation, presentation of solutions	6 C

Course: Numerical and applied mathematics - exercises (Exercise)	1 WLH

Examination requirements: Proof of knowledge of numerical and applied mathematics	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1023
Language: English	**Person responsible for module:** Dead of studies mathematics
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

three times	Bachelor: 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Institute of Numerical and Applied Mathematics

Georg-August-Universität Göttingen **Module B.Mat.3043: Non-life insurance mathematics**	6 C 4 WLH

Learning outcome, core skills: Non-life insurance mathematics deals with models and methods of quantifying risks with both, the occurrence of the loss and its amount showing random patterns. In particular the following problems are to be solved: • determing appropriate insurance premiums, • calculate adequate loss reserves, • determine how to allocate risk between policyholder and insurer resp. insurer and reinsurers. The German Actuarial Association (Deutsche Aktuarvereinigung e. V.) has certified this module as element of the training as an actuary („Aktuar DAV“ / „Aktuarin DAV“, cf. www.aktuar.de). To this end, the course is designed in view of current legislative and regulatory provisions of the Federal Republic of Germany. **Learning Outcomes** The aim of the module is to equip students with knowledge in four areas: 1. risk models, 2. pricing, 3. reserving, 4. risk sharing. After completion of the module students are familiar with fundamental terms and methods of non-life insurance mathematics. They • are familiar with and able to handle essential definitions and terms within non-life insurance mathematics; • have an overview of the most valuables problem statements of non-life insurance; • understand central aspects of risk theory; • know substantial pricing and reserving methods, • estimate ruin probabilities; • are acquainted with the most important reinsurance forms and reinsurance pricing methods. **Competencies** After successful completion of the module students have acquired fundamental competencies within non-life insurance. They are able to • evaluate and quantify fundamental risks, • model the aggregate loss with individual or collective model, • apply a basic reserve of solving approaches, • analyse and develop pricing models which mathematically are state of the art, • apply different reserving methods and calculate outstanding losses, • assess reinsurance contracts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture course with problem session	4 WLH

Examination: Written examination (120 minutes)	6 C

Examination requirements: Basic knowledge of non-life insurance mathematics	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1014
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations: Lecturers of the Institute of Mathematical Stochastics

Georg-August-Universität Göttingen **Module B.Mat.3044: Life insurance mathematics**	6 C 4 WLH

Learning outcome, core skills:
This module deals with the basics of the different branches in life insurance mathematics.In particular, the students get to know both the classical deterministic model and the stochastic model as well as how to apply them to problems relevant in the respective branch. On this base the students describe essential notions of present values, premiums and their present values as well as the actuarial reserve.

The German Actuarial Association (Deutsche Aktuarvereinigung e. V.) has certified this module as element of the training as an actuary („Aktuar DAV“ / „Aktuarin DAV“, cf. www.aktuar.de). To this end, the course is designed in view of current legislative and regulatory provisions of the Federal Republic of Germany.

Learning outcomes:
After successfully completing this module students are familiar with fundamental terms and methods of life insurance mathematics. In particular they

- assess cashflows within financial and insurance mathematics,
- apply methods of life insurance mathematics to problems from theory and practise.
- characterise financial secutiries and insurance contracts in terms of cashflows,
- have an overview of the most valuables problem statements of life insurance,
- understand the stochastic interest structure,
- master fundamental terms and notions of life insurance mathematics,
- get an overwiew of most important problems in life insurance mathematics,
- understand mortality tables and leaving orders within pension insurance,
- know substantial pricing and reserving methods,
- know the economic and legal requirements of private health insurance in Germany,
- are acquainted with per-head loss statistics, present value factor calculation and biometric accounting priciples.

Competencies:
A student who completes this module successfully should have acquired fundamental competencies within life insurance. The student should be able to

- assess cashflows with respect to both collateral and risk under deterministic interest structure,
- calculating premiums and provisions in life -, health- and pension-insurance,
- understand the actuarial equivalence principle as base of actuarial valuation in life insurance,
- apply and understand the actuarial equivalence principle for calculating premiums, actuarial reserves and ageing provisions,
- calculate profit participation in life insurance,
- master premium calculation in health-insurance,
- calculate present value and settlement value of pension obligations,
- find mathematical solutions to practical questions in life, health and pension insurance.

Workload:
Attendance time:
56 h
Self-study time:
124 h

Course: Lecture course with problem session	4 WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: Basic knowledge of life insurance mathematics	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.1014
Language: English	**Person responsible for module:** Dean of studies mathematics
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations: Lecturers of the Institute of Mathematical Stochastics

Georg-August-Universität Göttingen **Module B.Phy.1410: Certificate study focus Astrophysics/ Geophysics**	4 C

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls haben die Studierenden ihr Wissen im Bereich der Astro-/Geophysik (veranstaltungsübergreifend) vertieft. Die Studierenden sollten... • sich ein größeres Gebiet der Astro-/Geophysik selbstständig erarbeitet haben; • die Bachelorarbeit in einem breiten Kontext als Seminarvortrag wissenschaftlich darstellen können • Grundlagen der Astro-/Geophysik im Gespräch darstellen und anwenden können.	**Workload:** Attendance time: 0 h Self-study time: 120 h

Examination: Vortrag (ca. 45 Min.) und mdl. Prüfung (ca. 45 Min.) **Examination requirements:** Vortrag über die eigene Bachelorarbeit sowie mdl. Prüfung zum gewählten Schwerpunkt (Astro- bzw. Geophysik); Beherrschung und Anwendung der Begriffe und Methoden der Astro- bzw. Geophysik (Niveau Bachelor).	4 C

Admission requirements: 1.) Einführung in die Astro- bzw. Geophysik 2.) Vertiefende Veranstaltung in Astro- bzw. Geophysik 3.) Einführung ins wissenschaftliche Arbeiten: Astro- bzw. Geophysik 4.) Bachelorarbeit angemeldet in Astro- bzw. Geophysik	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 6
Maximum number of students: 210	

Georg-August-Universität Göttingen **Module B.Phy.1411: Certificate study focus in Biophysics/Physics of Complex Systems**	4 C

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls haben die Studierenden ihr Wissen im Bereich der Biophysik/Physik komplexer Systeme (veranstaltungsübergreifend) vertieft. Die Studierenden sollten... • sich ein größeres Gebiet der Biophysik/komplexer Systeme selbstständig erarbeitet haben; • die Bachelorarbeit in einem breiten Kontext als Seminarvortrag wissenschaftlich darstellen können • Grundlagen der Biophysik/komplexer Systeme im Gespräch darstellen und anwenden können.	**Workload:** Attendance time: 0 h Self-study time: 120 h

Examination: Vortrag (ca. 45 Min.) und mdl. Prüfung (ca. 45 Min.) **Examination requirements:** Vortrag über die eigene Bachelorarbeit sowie ca. 45 Min. mdl. Prüfung zur Biophysik bzw. Physik komplexer Systeme; Beherrschung und Anwendung der Begriffe und Methoden in Biophysik bzw. Physik komplexer Systeme (Niveau Bachelor).	4 C

Admission requirements: 1.) Einführende Veranstaltung in Biophysik bzw. Physik komplexer Systeme 2.) Vertiefende Veranstaltung in Biophysik bzw. Physik komplexer Systeme 3.) Einführung ins wissenschaftliche Arbeiten: Biophysik bzw. Physik komplexer Systeme 4.) Bachelorarbeit angemeldet in Biophysik bzw. Physik komplexer Systeme	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 6
Maximum number of students: 210	

Georg-August-Universität Göttingen **Module B.Phy.1412: Certificate study focus Solid State Physics / Materials Physics**	4 C

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls haben die Studierenden ihr Wissen im Bereich der Festkörper-/Materialphysik (veranstaltungsübergreifend) vertieft. Die Studierenden sollten... • sich ein größeres Gebiet der Festkörper-/Materialphysik selbstständig erarbeitet haben; • die Bachelorarbeit in einem breiten Kontext als Seminarvortrag wissenschaftlich darstellen können • Grundlagen der Festkörper-/Materialphysik im Gespräch darstellen und anwenden können.	**Workload:** Attendance time: 0 h Self-study time: 120 h

Examination: Vortrag (ca. 45 Min.) und mdl. Prüfung (ca. 45 Min.) **Examination requirements:** Vortrag über die eigene Bachelorarbeit sowie mdl. Prüfung in Festkörper- bzw. Materialphysik; Beherrschung und Anwendung der Begriffe und Methoden in Festkörper- bzw. Materialphysik (Niveau Bachelor)	4 C

Admission requirements: 1.) Einführende Veranstaltung in Festkörper- bzw. Materialphysik 2.) Vertiefende Veranstaltung in Festkörper- bzw. Materialphysik 3.) Einführung ins wissenschaftliche Arbeiten: Festkörper- bzw. Materialphysik 4.) Bachelorarbeit angemeldet in Festkörper- bzw. Materialphysik	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 6
Maximum number of students: 210	

Georg-August-Universität Göttingen **Module B.Phy.1413: Certificate study focus particle physics**	4 C

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls haben die Studierenden ihr Wissen im Bereich der Kern-/Teilchenphysik (veranstaltungsübergreifend) vertieft. Die Studierenden sollten... • sich ein größeres Gebiet der Kern-/Teilchenphysik selbstständig erarbeitet haben; • die Bachelorarbeit in einem breiten Kontext als Seminarvortrag wissenschaftlich darstellen können • Grundlagen der Kern-/Teilchenphysik im Gespräch darstellen und anwenden können.	**Workload:** Attendance time: 0 h Self-study time: 120 h

Examination: Vortrag (ca. 45 Min.) und mdl. Prüfung (ca. 45 Min.) **Examination requirements:** Vortrag (ca. 45 Min.) über die eigene Bachelorarbeit sowie ca. 45 Min. mdl. Prüfung in Kern-/Teilchenphysik; Beherrschung und Anwendung der Begriffe und Methoden der KT	4 C

Admission requirements: 1.) Einführung in KT 2.) Teilchenpyhsik II 3.) Einführung ins wissenschaftliche Arbeiten: KT 4.) Bachelorarbeit angemeldet in KT	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 6
Maximum number of students: 210	

Georg-August-Universität Göttingen **Module B.Phy.1512: Particle physics II - of and with quarks**	6 C 6 WLH

Learning outcome, core skills: After successful completion of this module, students should be familiar with the properties and interactions of quarks as well as with experimental methods and experiments which lead to their discovery and are used for precise studies.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Particle physics II - of and with quarks (Lecture)	4 WLH
Course: Particle physics II - of and with quarks (Exercise)	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Concepts and methods along with specific implementations of statistical methods in data analysis. Properties and discovery of quarks, discovery of W and Z bosons at hadron colliders, the top-quark, CKM mixing matrix, decays of heavy quarks, quark mixing and oscillations, CP-violation, jets, gluons and fragmentation, deep-inelastic scattering, QCD tests and measurement of the strong coupling alpha_s.	6 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.1522: Solid State Physics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of this Module students will be able to understand: • The role of the band-structure for electron and lattice dynamics • The motion of crystal electrons/holes in electric and magnetic fields • Quasiparticle scattering processes • The deviation of macroscopic dielectric properties from microscopic theory • The dielectric properties of metals and plasma oscillations • Independent electron magnetism and the emergence of collective magnetic phenomena • Magnetic ordering phenomena • The BCS theory of superconductivity	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Solid State Physics II	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Examination topics: Basics, phenomena and models for electrons and lattice dynamics in solids. Concepts of quasi-particle interaction: Transport phenomena incl. electrical and thermal conductivity, dielectric properties, plasmons. Semiconductors, magnetic properties of solids, superconductivity.	6 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to solid state physics
Language: German, English	**Person responsible for module:** Prof. Dr. Stefan Dirk Mathias
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 120	

Georg-August-Universität Göttingen **Module B.Phy.1531: Introduction to Materials Physics**	4 C 4 WLH

Learning outcome, core skills: This 2 week long intensive course is offered between the winter and summer semesters. It applies the knowledge obtained in the Einführung in die Festkörperphysik and Thermodynamik und statistische Physik to understanding the structure, properties and dynamic behavior of the materials we use in our everyday lives. **Learning outcomes:** crystal defects, disordered systems, impurities, crystalline mixtures and alloys, phase diagrams, phase transformations, diffusion, kinetics, materials selection, structure-property relations. **Core skills:** The students will gain an understanding of the different materials classes that we use in everyday life, including: how properties of materials are determined by their atomic scale structure, which driving forces determine the structure of equilibrium phases, and how kinetic processes control phase transformations and the dynamics of non-equilibrium processes.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Introduction to Materials Physics (Lecture)	2 WLH
Examination: Written or oral examWritten exam (120 minutes) or oral examination (approximately 30 minutes) **Examination prerequisites:** 50% of the homework problems must be solved successfully. **Examination requirements:** Crystal defects, disordered systems, impurities, crystalline mixtures and alloys, phase diagrams, phase transformations, diffusion, kinetics, materials selection.	4 C

Course: Introduction to Materials Physics (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** • Experimentelle Methoden der Materialphysik, • Einführung in die Festkörperphysik, • Thermodynamik und statistische Physik
Language: English	**Person responsible for module:** Prof.in Cynthia Ann Volkert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.1532: Experimental methods of materials physics**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** Understanding various experimental techniques for material preparation (with an emphasis on thin films) and methods for analyzing their structural and microstructural properties, along with foundational knowledge of how these methods are applied. **Core skills:** Students will develop a comprehensive understanding of material fabrication and the characterization of structural and microstructural features, gaining practical experience with selected methods, particularly in the context of complex materials such as oxides.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lectures on experimental methods	1 WLH
Course: Seminar	1 WLH
Course: Advanced lab course on experimental methods	2 WLH
Examination: Presentation (approx. 30 min.) and preparation of a report summarizing two experiments (max. 7 pages excluding graphics). **Examination prerequisites:** keine **Examination requirements:** In-depth understanding of the underlying physical principles and the practical realization of experimental methods of materials physics. Atomic bonding and crystal structure, crystallography (symmetries), fundamentals of defects, surfaces, thermodynamics of phases and mixtures, ordering effects and phase equilibria. Overview of material properties, basics of material selection. The grade is made up of the presentation (50%) and the report (50%).	6 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1531 Einführung in die Materialphysik
Language: English, German	**Person responsible for module:** Prof.in Cynthia Ann Volkert
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module B.Phy.1551: Introduction to Astrophysics**	8 C 6 WLH

Learning outcome, core skills: After successful completion of the module students are familiar with the basic concepts of astrophysics in observation and theory. In particular, they • have gained an overview of observational techniques in astronomy • understand the basic physics of the formation, structure and evolution of stars and planets have learned about the classification and structure of normal and active galaxies • understand the basic physics of homogeneous cosmology and cosmological structure formation	**Workload:** Attendance time: 84 h Self-study time: 156 h

Course: Lecture and exercises for introduction to astrophysics	
Examination: oral (approx. 30 minutes) or written (120 min.) exam **Examination prerequisites:** At least 50% of the homework of the excercises have to be solved successfully. **Examination requirements:** Observational techniques, Planets and exoplanets, planet formation, stellar formation, structure and evolution, galaxies, AGN and quasars, cosmology, structure formation	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Jens Carsten Niemeyer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1
Maximum number of students: 120	

Georg-August-Universität Göttingen **Module B.Phy.1561: Introduction to Physics of Complex Systems**	6 C 6 WLH

Learning outcome, core skills: Sound knowledge of essential methods and concepts from Nonlinear Dynamics and Complex Systems Theory, including practical skills for analysis and simulation (using, for example, the programming language python) of dynamical systems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Introduction to Physics of Complex Systems (Lecture)	4 WLH
Examination: written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination prerequisites:** At least 50% of the homework of the excercises have to be solved successfully. **Examination requirements:** • Knowledge of fundamental principles and methods of Nonlinear Physics • Modern experimental techniques and theoretical models of Complex Systems theory.	6 C

Course: Introduction to Physics of Complex Systems (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic programming skills (for the exercises)
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Klumpp Prof. Dr. Ulrich Parlitz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 2
Maximum number of students: 120	

Georg-August-Universität Göttingen **Module B.Phy.1571: Introduction to Biophysics**	6 C 6 WLH

Learning outcome, core skills: After attending this course, students will have basic knowledge about • the build-up of cells and the function of the components • transport phenomena on small length scales, derivation and solution of the diffusion equation • laminar hydrodynamics and its application in biological systems (flow, swimming, motility) • reaction kinetics and cooperativity, including enzymes • non-covalent interaction forces • self-assembly • biological (lipid) membrane build-up and dynamics • biopolymer physics and cytoskeletal filaments, including filament and cell mechanics • neurobiophysics • experimental methods, including state-of-the-art microscopy	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Introduction to Biophysics (Lecture) *Contents*: components of the cell; diffusion, Brownian motion and random walks; low Reynolds number hydrodynamics; chemical reactions, cooperativity and enzymes; biomolecular interaction forces and self-assembly; membranes; polymer physics and mechanics of the cytoskeleton; neurobiophysics; experimental methods and microscopy	4 WLH
Examination: Written exam (120 min.) or oral exam (ca. 30 min.) **Examination prerequisites:** At least 50% of the homework problems have to be solved successfully. **Examination requirements:** Knowledge of the fundamental principles, theoretical descriptions and experimental methods of biophysics.	6 C

Course: Introduction to Biophysics (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 2
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module B.Phy.1609: Foundations of the Unity of Human and Nature**	4 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten Studierende Einblicke in die naturwissenschaftlichen, ökonomischen und weltanschaulichen Grundlagen der Wechselbeziehung Mensch – Natur gewonnen haben. Sie sollten... • über Grundlagen in der Systemdynamik komplexer Systeme verfügen; • mit Präsentationsmedien umgehen können; • komplexe Sachverhalte vor Experten und fachfremden Zuhörern präsentieren können; • den Erkenntnisforschritt im Seminar kritisch reflektieren können. Als Schlüsselkompetenzen sollten sie Diskussionsfähigkeit, Kritikfähigkeit und Ausdrucksfähigkeit erworben haben.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Grundlagen zur Einheit von Mensch und Natur	
Examination: Lecture (approx. 30 minutes) **Examination prerequisites:** Aktive Mitwirkung an der Diskussion der Präsentationen und Erarbeitung eines laufenden Erkenntnisfortschritt des Seminars als Hausaufgabe **Examination requirements:** Verständnis der wissenschaftlichen Grundlagen der Wechselbeziehung Mensch-Natur anhand wissenschaftlicher Fachliteratur. Die Entwicklung des Stoffwechsels des Menschen mit der Natur, insbesondere in der Produktion und Reproduktion von Gütern behandelt und ihre philosophische Reflexion wird behandelt. Der Schwerpunkt liegt auf der modernen Entwicklung der internationalen kapitalistischen Produktion zu einem dominanten Einflussfaktor auf die Biosphäre, die daraus resultierenden Möglichkeiten und die Faktoren der möglichen Untergrabung der Einheit von Mensch und Natur in einer globalen Umweltkatastrophe.	4 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Jooß
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5402: Advanced Quantum Mechanics**	6 C 6 WLH

Learning outcome, core skills: **Acquisition of knowledge:** After successful completion of the module students will be familiar with the core concepts and mathematical methods of advanced quantum mechanics and quantum many-body theory. **Competencies:** Students will be able to model and analyse single-particle and many-body quantum mechanical systems, drawing also on concepts of quantum information theory.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Advanced Quantum Mechanics (Lecture)	4 WLH
Examination: written exam (120 min.) or oral exam (approx. 30 min.) **Examination prerequisites:** At least 50% of the homework of the excercises have to be solved successfully. **Examination requirements:** Time-dependent perturbation theory, scattering, mixed states, path integrals in quantum mechanics, quantum information, entanglement as resource, many-body systems, second quantisation, basis elements of quantum field theory.	6 C

Course: Advanced Quantum Mechanics (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of 1-particle quantum mechanics
Language: English	**Person responsible for module:** Prof. Dr. Stefan Kehrein
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 3
Maximum number of students: 80	

Georg-August-Universität Göttingen **Module B.Phy.5404: Introduction to Statistical Machine Learning**	3 C 3 WLH

Learning outcome, core skills: After successful completion of the module students will be familiar with the core concepts and mathematical methods of statistical machine learning. Students will be able to devise, implement and analyse a range of machine learning approaches based primarily on a Bayesian statistics framework, including methods for regression, classification and approximate inference methods based on connections to statistical physics.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Introduction to Statistical Machine Learning (lecture with exercise if necessary)	
Examination: oral (approx. 30 min.) or written exam (120 min.) **Examination requirements:** Bayesian regression and classification, non-parametric models including Gaussian process, graphical models, variational inference	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic probability theory and linear algebra; familiarity with equilibrium statistical mechanics is helpful
Language: English	**Person responsible for module:** Prof. Dr. Peter Kurt Sollich
Course frequency: every 4th semester; At least once every four semesters in the summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 80	

Georg-August-Universität Göttingen **Module B.Phy.5405: Active Matter**	3 C 2 WLH

Learning outcome, core skills: **Learning objectives** : The students will learn about the basic principles of the physics of active matter as characterized via nonequilibrium statistical physics. Topics will include: physics of micro-swimming, hydrodynamic coordination, continuum description of scalar active matter and motility-induced phase separation, polar active matter and flocking, active liquid crystals (e.g. nematics) and defects, phoretic active matter, activity in enzyme suspensions, and active membranes. **Competences** : This course will give the students a good theoretical understanding of active matter and enable them to follow the state-of-the-art research in the area of active matter.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Active Matter (Lecture)	
Examination: written examination (60 Min.) or oral examination (approx. 30 Min.)	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistical physics and hydrodynamics
Language: English	**Person responsible for module:** Prof. Dr. Ramin Golestanian
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5503: Astrophysical Spectroscopy**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the modul the students should ... • know astronomial telescopes and measurement techniques • have an understanding of spectroscopic observation techniques • know principles of spectroscopy and design of astronomical spectrographs • know planning and execution of astronomical observations • data reduction and analysis	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Astrophysical Spectroscopy (Lecture)	

Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Knowledge of astronomical spectroscopy, telescopes, image errors, instrumentation; observation, reduction and analysis of spectroscopic data.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Astrophysics
Language: German, English	**Person responsible for module:** Prof. Dr. Ansgar Reiners
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5505: Data Analysis in Astrophysics**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students are able to model noise and signal.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung (Lecture)	
Examination: Oral examination (approx. 30 minutes)	3 C

Examination requirements: Demonstrate an understanding of concepts developed in lecture: Introduction to methods of data analysis in astrophysics: Random signal and noise; correlation analysis; model fitting by least squares and maximum likelihood; Monte Carlo simulations; Fourier analysis; filtering; signal and image processing; Hilbert transform; mapping; applications to problems of astrophysical relevance.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5509: Introduction to theoretical astrophysics**	4 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden wissenschaftliche Vorträge über Themen der theoretischen Astrophysik (Grundlagen der theoretischen Astrophysik, von N-Körper-Problemen, Hydrodynamik, Magneto-Hydrodynamik bis zu ISM-Chemie und Strahlungstransport) vorbereiten und halten können.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar (Seminar)	
Examination: Vortrag (ca. 45 Min.) **Examination prerequisites:** Aktive Teilnahme	

Examination requirements: Angemessene Aufbereitung und Präsentation eines Themas der theoretischen Astrophysik.	

Admission requirements: none	**Recommended previous knowledge:** Einführung in die Astrophysik
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5511: Magnetohydrodynamics**	3 C 2 WLH

Learning outcome, core skills: After successful comletion of this module, students should be able to apply the fundamental concepts and methods of magnetohydrodynamics to geo- and astrophysical problems.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture (Lecture)	

Exactly one of the following examinations must be successfully completed:	
Examination: Written examination (120 minutes)	3 C
Examination: Oral examination (approx. 30 minutes)	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Andreas Tilgner
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5513: Numerical fluid dynamics**	6 C 4 WLH

Learning outcome, core skills: After completion of this module students should ... • know the basic methods for solving partial differential equations • be able to program and analyze numerical methods for the solution of partial differential equations.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture with exercises	

Exactly one of the following examinations must be successfully completed:	
Examination: Term Paper (max. 15 pages)	6 C
Examination: Oral examination (approx. 30 minutes)	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Andreas Tilgner
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5514: Physics of the Interior of the Sun and Stars**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students should be able ... • to understand the equations of stellar structure, • to understand current questions about the physics of solar/stellar interiors and magnetism, • to understand the physics of solar/stellar oscillations and their diagnostic potential.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung (Lecture)	
Examination: Oral examination (approx. 30 minutes)	3 C

Examination requirements: Demonstrate an understanding of concepts developed in lecture: Introduction to stellar structure, evolution, and dynamics; rotation; convection; dynamos; observations of solar and stellar oscillations; introduction to stellar pulsations; normal modes; weak perturbation theory; numerical forward modeling	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Laurent Gizon
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5517: Physics of the Sun, Heliosphere and Space Weather: Key Knowledge**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the module the participants understand: • the elementary parameters of the Sun-Earth-System, • the origin and different forms of solar activity, • the physical processes of the heliosphere, • the exploration of space and the Sun with space missions, • the effects of the Sun on Earth and space weather.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Physics of the Sun, Heliosphere and Space Weather: Key Knowledge (Lecture) *Contents*: • Basic knowledge of the Sun-Earth-System, • Basic physics of the Sun, its outer atmosphere and its effects on interplanetary spac, • Exploration of the Sun and space with dedicated spacecraft and instruments, • Effects of the Sun on Earth, including cosmic effects, Finally, the research field of space weather, different forecast methods and new projects will be presented.	

Exactly one of the following examinations must be successfully completed:	
Examination: Written examinationWritten examination (120 minutes)	3 C
Examination: Oral examinationoral examination (approx. 30 minutes)	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Ansgar Reiners Contact Person: Dr. Bothmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5518: Physics of the Sun, Heliosphere and Space Weather: Space Weather Applications**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Learning outcome: Introduction into the physics processes of space weather based on applied study cases. Core skills: Knowledge about physical processes of space weather and its applications. Ability in self-organised solving of case studies.	Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung (Lecture)	

Exactly one of the following examinations must be successfully completed:	
Examination: Written examination (120 minutes)	3 C
Examination: Oral examination (approx. 30 minutes)	3 C

Admission requirements:	**Recommended previous knowledge:**
none	none
Language: German, English	**Person responsible for module:** Prof. Dr. Ansgar Reiners Contact person: Dr. Bothmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5522: Solar Eclipses and Physics of the Corona**	3 C 2 WLH

Learning outcome, core skills: After successfully completed the modul students should understand the basic processes on how a cool star can heat and sustain its million Kelvin hot outer atmosphere, the corona. Using basic concepts of magnetohydrodynamics they should also be able to explain the structure and dynamics of the corona.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture (Lecture)	

Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Understanding of basic physical process in the corona of a star. The exam will be based on excecises distributed during the lecture course. Phenomenology of solar eclipses, timing of eclipses; Physics of hot gases; interaction of gas and magnetic field in the outer atmosphere of the Sun and other stars; phyiscal processes for plasma heating („coronal heating“); wave and Ohmic heating, acceleration of plasma to form a solar wind, solar-terrestrial relations	3 C

Admission requirements: none	**Recommended previous knowledge:** -Introduction to astrophysics - Electrodynamics
Language: German, English	**Person responsible for module:** apl. Prof. Dr. Hardi Peter
Course frequency: every 4th semester; summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5523: General Relativity**	6 C 6 WLH

Learning outcome, core skills: The students master the foundations of General Relativity mathematically and physically. They are able to perform corresponding computations in simple models.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: General Relativity (Lecture)	4 WLH
Examination: Written examination (120 minutes) **Examination requirements:** Basic structures of Differential geometry, simple examles of computations, Einstein's equation, underlying principles, Schwarzschild space-time, classical tests of General Relativity, foundations of cosmology.	6 C

Course: Excercises	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of Mechanics, Electrodynamics and special Relativity, Analysis of several real variables
Language: German, English	**Person responsible for module:** Prof. Laura Covi
Course frequency: Two-year as required / Winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 60	

Georg-August-Universität Göttingen **Module B.Phy.5524: Seminar Advanced Topics of General Relativity Theory**	4 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden... • sich in ein fortgeschrittenes Thema aus dem Bereich der Allgemeinen Relativitätstheorie einarbeiten und dieses professionell präsentieren können; • die Fähigkeit zur kompetenten Präsentation der wesentlichen Ideen und Rechnungen besitzen.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	

Examination: Vortrag (ca. 90 Min.) mit schriftlicher Ausarbeitung (max. 20 Seiten) **Examination prerequisites:** Aktive Teilnahme **Examination requirements:** Studierende sollen die dem Thema zugrunde liegenden Fachbegriffe erklären und die wesentlichen Rechnungen skizzieren können.	

Admission requirements: keine	**Recommended previous knowledge:** Grundlagen der ART
Language: German, English	**Person responsible for module:** apl. Prof. Folkert Müller-Hoissen
Course frequency: zweijährig je nach Bedarf im SoSe oder WiSe	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 10	

Additional notes and regulations: Schwerpunkte: Astro-/Geophysik sowie Kern-/Teilchenphysik

Georg-August-Universität Göttingen **Module B.Phy.5525: Seminar on Integrable Systems and Solitons**	4 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Special topics of the mathematics and physics of integrable systems and solitons, using original articles or advanced text books. **Core skills:** Ability to get acquainted with an advanced topic from this area of mathematics and physics, using original articles or advanced text book material, and to present a professional talk about this material.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	

Examination: Presentation with discussion (approx. 75 minutes) and written elaboration (max. 10 pages) **Examination prerequisites:** Active participation	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of the mathematics and physics of integrable systems and solitons.
Language: German, English	**Person responsible for module:** apl. Prof. Folkert Müller-Hoissen
Course frequency: every 4th semester; Two-year as required / Summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module B.Phy.5529: Galaxies and the Intergalactic Medium**	4 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden ... • mit Grundlagen und aktueller Forschung bezüglich Galaxien und dem intergalaktischen Medium vertraut sein; • entsprechende Grundlagenkenntnisse in Vorträgen darstellen können.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	

Examination: Vortrag (ca. 45 Min.) **Examination prerequisites:** Aktive Teilnahme	4 C

Examination requirements: Präsentation wichtiger Grundlagen sowie aktueller Forschungsergebnisse über Galaxien oder das intergalaktische Medium. Globale Eigenschaften von Galaxien und deren Interaktion mit dem intergalaktischen Medium; kosmologische Entwicklung des intergalaktischen Medium: Beobachtungen, analytische und numerische Modelle.	

Admission requirements: Einführung in die Astrophysik	**Recommended previous knowledge:** Grundlagen der Astro- und Geophysik
Language: German, English	**Person responsible for module:** PD Dr. Wolfram Schmidt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module B.Phy.5530: Introduction to Cosmology**	3 C 2 WLH

Learning outcome, core skills: Learning outcome: Newtonian cosmology, relativistic homogeneous isotropic cosmology, horizons and distances, the hot universe, Newtonian inhomogeneous cosmology, inflation. This course will be based on video lectures and short quizzes that will be discussed in class. Core skills: Understanding the evolution of the universe on very large scales, knowledge of current questions in physical cosmology.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Introduction to Cosmology (Lecture) *Course frequency:* each summer semester	2 WLH
Examination: Written exam (120 Min.) or oral exam (approx. 30 Min.) **Examination requirements:** Physikalisches Verständnis der Entwicklung des Universums auf sehr großen Skalen, Kenntnis der aktuellen Fragen der Kosmologie	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jens Carsten Niemeyer
Course frequency: every 4th semester; vorraussichtlich SoSe	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 5
Maximum number of students: 20	

Additional notes and regulations: Study Foci: AG, KT

Georg-August-Universität Göttingen **Module B.Phy.5532: Symmetries and Nonlinear Differential Equations in Physics**	6 C 6 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten Studierende... • ein Verständnis verschiedener Symmetriebegriffe in Zusammenhang mit gewöhnlichen und partiellen Differenzialgleichungen, insbesondere Lie-Punktsymmetrien und Berührungstransformationen, aber auch allgemeine Koordinatentransformationen und Eichtransformationen, sowie deren Relevanz in physikalischen Theorien gewonnen haben; • die Anwendungsfähigkeit auf relevante Beipiele aus der Physik entwickelt haben; • die wichtigsten Solitonengleichungen, Lösungsmethoden, Eigenschaften exakter Lösungen, Auftreten in physikalischen Modellen kennen. • einen Überblick gewinnen hinsichtlich der Bedeutung von kontinuierlichen Symmetrien für die Untersuchung von Differenzialgleichungen und als Grundlage physikalischer Theorien; • in der Lage sein, grundlegende mathematische Methoden auf einfache Beispiele anwenden zu können; • das Auftreten von Solitonen (lokalisierte und formstabile Wellen mit einer Art nichtlinearem Superpositionsprinzip) als typisch nichtlineares Phänomen (spezieller) nichtlinearer partieller Differenzialgleichungen verstanden haben; • die Fähigkeit zur Nutzung von Mathematiksoftware (Mathematica oder Maple) in diesem Kontext entwickelt haben.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Symmetrien und Nichtlineare Differenzialgleichungen in der Physik (Lecture)	4 WLH
Course: Symmetrien und Nichtlineare Differenzialgleichungen in der Physik (Exercise)	2 WLH

Examination: Klausur (120Min.) oder mdl. Prüfung (ca. 30 Min.) **Examination requirements:** Symmetriebegriffe, Anwendungsfähigkeit entsprechender Methoden in einfachen Beispielen; spezielle mathematische Methoden der Theorie integrabler Systeme; Beispiele von Solitonen-Gleichungen und deren Auftreten in physikalischen Systemen.	6 C

Admission requirements: none	**Recommended previous knowledge:** Differenzial- und Integralrechnung mehrerer Veränderlicher; Grundlagen der komplexen Analysis; Grundkenntnisse der Mechanik und Elektrodynamik
Language: German, English	**Person responsible for module:** apl. Prof. Folkert Müller-Hoissen
Course frequency: alle zwei Jahre im WiSe	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

three times	from 4
Maximum number of students: not limited	

Additional notes and regulations:

Bachelor und Master

Schwerpunkt Astro-/Geophysik, Biophysik/Komplexe Systeme; Kern-/Teilchenphysik

Georg-August-Universität Göttingen **Module B.Phy.5533: Solar and Stellar Activity**	6 C 4 WLH

Learning outcome, core skills: Fundamental knowledge of solar and stellar structure, sun-like stars, generation of magnetic fields and magnetic activity, physics of the chromosphere and corona, dynamo mechanisms, evolution of stellar activity and other stellar parameters, star-planet interaction.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture (Lecture)	

Examination: Written examination (ca. 120 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Knowledge of the structure of the sun and solar-like stars; generation of magnetic fields and magnetic activity; physics of the chromosphere and the corona; dynamo mechanisms; evolution of stellar activity; star-planet interaction	6 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Astrophysics
Language: German, English	**Person responsible for module:** Prof. Dr. Ansgar Reiners
Course frequency: unregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5535: Fluid dynamics, nonlinear dynamics and turbulence**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden... • die kinetische und fluiddynamische Beschreibung von Gasen verstanden haben; • verschiedene Näherungen (relativistisch/nichtrelativistisch, viskos/ideal, etc.) anwenden können; • Zugang zur Theorie der Turbulenz gefunden haben; • den Ursprung von Skalengesetzen verstanden haben.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung *Contents*: Kinetische Theorie, relativistische und nichtrelativistische kompressible Fluiddynamik; allgemeine Aspekte nichtlinearer Systeme; Turbulenz als nichtlineares Phänomen in der Fluiddynamik; Überschallturbulenz; Skalengesetze und Intermittenz	

Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Grundlagen der kinetischen Theorie; fluiddynamische Beschreibung (insbesondere kompressible Navier-Stokes-Gleichungen); Theorie der Turbulenz (allgemeine Grundlagen; Kolmogorov-Theorie und Erweiterungen/Modifikationen) Kinetische Theorie; relativistische und nichtrelativistische kompressible Fluiddynamik; allgemeine Aspekte nichtlinearer Systeme; Turbulenz als nichtlineares Phänomen in der Fluiddynamik; Überschallturbulenz; Skalengesetze und Intermittenz	3 C

Admission requirements: keine	**Recommended previous knowledge:** Theoretische Physik
Language: English	**Person responsible for module:** PD Dr. Wolfram Schmidt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 3
Maximum number of students: not limited	

Additional notes and regulations: Schwerpunkt Astro-/Geophysik Schwerpunkt Biophysik/Komplexe Systeme

Georg-August-Universität Göttingen **Module B.Phy.5538: Stellar Atmospheres**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students should know how to applicate physical concepts (such as atomic and molecular physics, thermodynamics, and statistical physics) in an astrophysical context, and know their implementation in numerical simulations.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Physics of stellar atmospheres (Vorlesung) *Course frequency:* each winter semester	2 WLH
Course: Stellar atmosphere modelling (Computerpraktikum) *Course frequency:* each winter semester	2 WLH
Examination: Oral Exam (ca. 30 Min.)	6 C

Examination requirements: Oral account of the context and concepts learned during the two courses on the topics of interaction of radiation and matter; radiative transfer; structure of stellar atmospheres; and theoretical foundations of spectral analysis; answering of specific questions on all the aspects in this field.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Dreizler
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 20	

Additional notes and regulations: Schwerpunkt: Astro-/Geophysik

Georg-August-Universität Göttingen **Module B.Phy.5539: Physics of Stellar Atmospheres**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students should understand the interaction of radiation and matter, radiative transfer, structure of stellar atmospheres; thorough understand the theoretical foundations of spectral analysis and know how to applicate physical concepts (such as atomic and molecular physics, thermodynamics, and statistical physics) in an astrophysical context.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Physics of stellar atmospheres (Vorlesung)	
Examination: Oral Exam (ca. 30 Min.)	3 C

Examination requirements: Oral account of the context and concepts of radiative transfer and structure of stellar atmospheres.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Dreizler
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 20	

Additional notes and regulations: Schwerpunkt: Astro-/Geophysik

Georg-August-Universität Göttingen **Module B.Phy.5543: Black Holes**	3 C 2 WLH

Learning outcome, core skills: After successfully completing the module, students are expected to understand the basic mathematical properties of black holes as solutions of Einstein's equations of General Relativity and to know the scenarios of astrophysical black hole formation.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Black Holes (Lecture)	

Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Gravitational collapse, Schwarzschild black holes, charged black holes, rotating black holes, horizon properties, black hole mechanics, black hole thermodynamics	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of General Relativity
Language: German, English	**Person responsible for module:** Prof. Dr. Jens Carsten Niemeyer
Course frequency: at irregular intervals	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5547: Exoplanets**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the module, the students should be able to understand the main concepts of extrasolar planets, their formation and evolution. They should thouroughly understand observational methods and the current picture of the observed planet population, exoplanet atmospheres and potential exoplanet habitability.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Exoplanets (Lecture)	2 WLH
Examination: Oral Exam (approx. 30 Min.) or Written Exam (120 Min.) **Examination requirements:** Demonstrate an understanding of concepts developed in the lecture: Context of exoplanets, observational concepts and physical interpretation of the observations. Role of solar system among exoplanets.	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1551 Introduction to Astrophysics
Language: English	**Person responsible for module:** Prof. Dr. Ansgar Reiners
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5548: Stellar Structure and Evolution**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the module, the students should be able to understand the physical princles of stars and their evolution from the protostars to main sequence dwarf stars, to later phases including giant stars, and to final states like White Dwarfs, Neutron Stars, and Black Holes. They should understand the observed stellar population and theoretical concepts to explain their physical structure.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Stellar Structure and Evolution (Lecture)	2 WLH

Examination: Oral Exam (approx. 30 Min.) or Written Exam (120 Min.) **Examination requirements:** Demonstrate an understanding of concepts developed in the lecture: Physical concepts of stars, their stability, energy transport, formation and evolution. Late and final stages of stellar evolution. Observational diagnostics of stars. Theoretical methods to model stars and their evolution.	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1551 Introduction to Astrophysics
Language: English	**Person responsible for module:** Prof. Dr. Ansgar Reiners
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5601: Theoretical and Computational Neuroscience I**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden... • ein vertieftes Verständnis folgender Themen entwickelt haben: TCN I: biophysikalische Grundlagen neuronaler Anregbarkeit, mathematische Grundlagen neuronaler Anregbarkeit, Input-Output Beziehungen und Bifurkationen, Klassifizierung, Existenz, Stabilitaet und Koexistenz sychroner und asynchroner Zustaende in spikenden neuronalen Netzwerken; • Methoden und Methodenentwicklung für die Analyse hochdimensionaler Modelle ratenkodierter Einheiten in Feldmodellen verstehen; • die Handhabung von Bifurkationsszenarien und zugehörigen Instabilitäten verstanden haben.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Collective Dynamics Biological Neural Networks I (Lecture)	

Exactly one of the following examinations must be successfully completed:	
Examination: Written examination (120 minutes)	3 C
Examination: Oral examinationMündliche Prüfung (approx. 30 minutes)	3 C
Examination: Vortrag (2 Wochen Vorbereitungszeit) (30 minutes)	3 C

Examination requirements: Grundlagen der Membranbiophysi;, Bifurkationen anregbarer Systeme; Verständnis der Grundlagen der Modellierungsansätze der Neurophysik; kollektive Zustände spikender neuronaler Netzwerke; insbesondere Synchonizität; Balanced State; Phase-Locking und diesen Zuständen unterliegenden lokalen und Netzwerkeigenschaften: Netzwerktopologie; Delays; inhibitorische und exzitatorische Kopplung; sparse random networks	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fred Wolf
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 90	

Georg-August-Universität Göttingen **Module B.Phy.5602: Theoretical and Computational Neuroscience II**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten Studierende... • das vertiefte Verständnis folgender Themen entwickelt haben: TCN II: Grundlagen neuronaler Anregbarkeit, Input-Output Beziehungen bei Einzelneuronen, eindimensionale Feldmodelle (Feature Selectivity, Contrastinvariance), zweidimensionale Feldmodell (Zusammenwirken von kurz- und langreichweitigen Verbindungen sowie lokaler Nichtlinearitaeten), Amplitudengleichungen und ihre Loesungen; • Methoden und Methodenentwicklung für die Analyse spikender neuronaler Netzwerke mit und ohne Delays, Handhabung von Bifurkationsszenarien und zugehörigen Instabilitäten verstehen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Collective Dynamics Biological Neural Networks II (Lecture)	

Exactly one of the following examinations must be successfully completed:	
Examination: Written examination (120 minutes)	3 C
Examination: Oral examination (approx. 30 minutes)	3 C
Examination: Seminarvortrag (2 Wochen Vorbereitungszeit) (30 minutes)	3 C

Examination requirements: Ratenmodelle von Einzelneuronen; Feldansatz in der theoretischen Neurophysik; Grundlagen der Bifurkationen anregbarer System; Verständnis der Grundlagen der Modellierungsansätze der Neurophysik; Zusammenhang diskrete/kontinuierliche Modelle; kollektive Zustände ein- und zweidimensionaler Feldmodelle, insbesondere ring model of feature selectivity; orientation preference maps.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fred Wolf
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 90	

Georg-August-Universität Göttingen **Module B.Phy.5604: Foundations of Nonequilibrium Statistical Physics**	3 C 2 WLH

Learning outcome, core skills: **Lernziele** : Invariant densities of phase-space flows with local and global conservation of phase-space volume; reduction of a microscopic dynamics to a stochastic description, to kinetic theory and to hydrodynamic transport equations; fluctuation theorems; Green-Kubo relations; local equilibrium; entropy balance and entropy production; the second law; statistical physics of equilibrium processes as a limit of a non-equilibrium processes; applications in nanotechnology and biology: small systems far from thermodynamic equilibrium. **Kompetenzen** : After successful completion of the modul the students should know modeling approaches for a statistical-physics description of small systems far from thermodynamic equilibrium: in homework problems, that will be presented in a subsequent symposium, this will be highlighted by explicitly working out examples in nanotechnology and biology.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: lecture	
Examination: Presentation (approx. 30 min) and handout (max. 4 pages)	3 C

Examination requirements: Modeling of an experimental system by a Master equation, kinetic theory or Non-Equilibrium Molecular Dyanamics with discussion of the appropriate fluctuation relations and/or the relation of models on different levels of coarse graining.	

Admission requirements: none	**Recommended previous knowledge:** Statistische Physik
Language: English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5605: Computational Neuroscience: Basics**	3 C 2 WLH

Learning outcome, core skills: **Goals:** Introduction to the different fields of Computational Neuroscience: • Models of single neurons, • Small networks, • Implementation of all simple as well as more complex numerical computations with few neurons. • Aspects of sensory signal processing (neurons as ‚filters'), • Development of topographic maps of sensory modalities (e.g. visual, auditory) in the brain, • First models of brain development, • Basics of adaptivity and learning, • Basic models of cognitive processing. **Kompetenzen/Competences:** On completion the students will have gained… • … overview over the different sub-fields of Computational Neuroscience; • … first insights and comprehension of the complexity of brain function ranging across all sub-fields; • … knowledge of the interrelations between mathematical/modelling methods and the to-be-modelled substrate (synapse, neuron, network, etc.); • … access to the different possible model level in Computational Neuroscience.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Computational Neuroscience: Basics (Lecture)	
Examination: Written examination (45 minutes) **Examination requirements:** Actual examination requirements: Having gained overview across the different sub-fields of Computational Neuroscience; Having acquired first insights into the complexity of across the whole bandwidth of brain function; Having learned the interrelations between mathematical/modelling methods and the to-be-modelled substrate (synapse, neuron, network, etc.) Being able to realize different level of modelling in Computational Neuroscience.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 2 - 6; Master: 1 - 4

Georg-August-Universität Göttingen **Module B.Phy.5607: Seminar: Mechanics and dynamics of the cytoskeleton**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
After successfully finishing this course, students will be able to work independently on specific questions with the help of book chapters or journal publications and to present the topic in a seminar talk; they also acquire the ability to engage in critical scientific discussion.	Attendance time: 28 h Self-study time: 92 h

Course: Seminar: Mechanics and dynamics of the cytoskeleton	
Examination: Presentation with discussion (Bachelor approx. 30 min., Master approx. 60 min.) **Examination prerequisites:** Active participation **Examination requirements:** Polymer physics and polymer networks; membranes; physics on small scales; cell mechanics; molecular motors; cell motility; dynamics in the cell.	4 C

Admission requirements:	**Recommended previous knowledge:**
none	Introduction to Biophysics and/or Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module B.Phy.5612: Physics of Extreme Events**	4 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden mit den Grundlagen der Physik extremer Events, den analytischen und numerischen Methoden für die statistische Analyse und Vorhersage extremer Events, der Anwendung der Theorie extremer Events u. a. in Wellensystemen, Biophysik und Ökonophysik, vertraut sein.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	

Examination: Vortrag (ca. 60 Min.) **Examination prerequisites:** Aktive Teilnahme	4 C

Examination requirements: Entwicklung und Handhabung statistischer Modelle, die extreme Events beschreiben; analytische und numerische Methoden für deren Analyse und Vorhersage. Die Vortragszeit umfasst auch die anschließende Diskussion.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** apl. Prof. Dr. Jürgen Vollmer
Course frequency: every 4th semester; zweijährig je nach Bedarf im SoSe oder WiSe	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5614: Proseminar Computational Neuroscience**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
After successful completion of the module, students have deepened their knowledge in computational neuroscience / neuroinformatics by independent preparation of a topic. They should... - know and be able to apply methods of presentation of topics from computer science; - be able to deal with (English-language) literature; - be able to present a topic of computer science; - be able to lead a scientific discussion.	Attendance time: 28 h Self-study time: 92 h

Course: Proseminar	
Examination: Talk (approx. 45 Min.) with written report (max. 7 S.) **Examination requirements:** Proof of the acquired knowledge and skills to deal with scientific literature from the field of computational neuroscience / neuroinformatics under guidance by presentation and preparation.	4 C

Admission requirements:	**Recommended previous knowledge:**
none	B.Phy.5605
Language:	**Person responsible for module:**
English	Prof. Dr. Florentin Andreas Wörgötter
Course frequency:	**Duration:**
each semester	1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**
three times	Bachelor: 4 - 6; Master: 1 - 3
Maximum number of students:	
14	

Georg-August-Universität Göttingen **Module B.Phy.5615: Biology and Biochemistry for Physicists**	3 C 2 WLH

Learning outcome, core skills: **Lernziele** : Aufbau und Erweiterung von Kenntnissen über biologische Grundlagen der Biophysik. **Kompetenzen:** Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden über grundlegende Kenntnisse über Struktur und Funktion von Makromolekülen in der Zelle, die wichtigsten zellulären Vorgänge sowie über die Signaltransduktion und biologische Informationsverarbeitung verfügen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung	
Examination: Written examination (120 minutes)	3 C

Examination requirements: Fundierte biologische Kenntnisse als Grundlage für die Bearbeitung von Fragestellungen der Biophysik	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik / Ansprechpartner Dr. Qui Van
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 35	

Georg-August-Universität Göttingen **Module B.Phy.5624: Introduction to Theoretical Neuroscience**	4 C 2 WLH

Learning outcome, core skills: After successfully completing this course, students should understand and be able to employ the fundamental concepts, model representations and mathematical methods of the theoretical physics of neuronal systems. Students learn to work independently on complex scientific questions and to present them appropriately to specialists in their own and other subjects; they also acquire the ability to engage in critical scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	
Examination: Lecture (approx. 60 minutes) **Examination prerequisites:** Active Participation **Examination requirements:** Elementary knowledge of the construction, biophysics and function of nerve cells; probabilistic analysis of sensory encoding; simple models of the dynamics and information processing in networks of biological neurons; modelling of the biophysical foundations of learning processes.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fred Wolf
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module B.Phy.5625: X-ray physics**	6 C 4 WLH

Learning outcome, core skills: Knowledge in: • Radiation-matter interaction • Dosimetry, radiobiology and radiation protection • Scattering experiments: photons, neutrons and electrons • Fundamental concepts in diffraction and Fourier theory • Structure analysis in crystalline and non-crystalline condensed matter • Generation of x-rays and synchrotron radiation • X-rays optics and detection • X-ray spectroscopy, microscopy and imaging After taking the course, students • will integrate fundamental concepts of matter-radiation interaction . • are able to apply quantitative scattering techniques with short wavelength radiation for structure analysis of condensed matter, including problems in solid state, materials, soft matter, and biomolecular physics • are able to plan and carry out x-ray laboratory experiments • are prepared to participate in beamtimes at synchrotron, neutron or free-electron radiation sources • can solve analytical problems in x-ray optics, diffraction and imaging	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: X-ray Physics	
Examination: Written examination (120 minutes) or oral examination (ca. 30 min.) or presentation (ca. 30 min.) **Examination prerequisites:** none **Examination requirements:** • solve problems of the topics mentioned above on a quantitative level, including calculations of structure factor, correlation functions, • applications of Fourier theory to structure analysis and basic solutions to the phase problem, • solve problems of wave optical propagation and diffraction • knowledge about interaction mechanisms and order -of-magnitude estimations, • knowledge about theoretical concepts and experimental implementations of different techniques, • knowledge of laboratory skills (x-ray sources, detection, dosimetry)	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Tim Salditt

Course frequency: every 4th semester; im Sommersemester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.Phy.5628: Pattern Formation**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome** : Spatial patterns such as stripes or spots emerge in many physical systems, biology and beyond. This course will cover the mechanisms and most common examples of such patterns. We shall show how broad classes of nonlinear dynamical systems are related in terms of non-dimensional groups, and symmetries. Linear stability theory will be introduced to demonstrate the onset of emergent features, and amplitude equations will be derived around these instabilities to describe the rules of pattern selection (like spots or stripes). Finally, the significance of defects and their dynamics will be explored. Model systems such as convection cells, waves in excitable tissue, wrinkling, reaction-diffusion patterns and beyond will be introduced. Additional context and related questions of current research will be covered in talks by members of the Göttingen Research Campus. **Core skills:** After successful completion of the modul, the students should... • know, how to approach the study of natural patterns in nonlinear systems from a rigorous physical perspective; • know, how to identify the conditions for the onset of a pattern, and to analyse pattern selection and stability; • be able to develop a familiarity with the principles of pattern formation, and apply these to a broad range of situations, from the large-scale structure of the universe, to a leopard's spots and flux tubes in superconductors; • be able to perform an in-depth investigation on a particular topic of their choice, and present this topic during class.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: lecture	2 WLH
Course: tutorium	2 WLH

Examination: presentation (approx. 45 min) and handout (max. 4 pages)	6 C

Examination requirements: Modeling of an experimental system by identifying appropriate dimensionless variables; determining the stability threshold; deriving appropriate amplitude equations and discussing the pattern selection beyond the threshold of linear stability.	

Admission requirements: none	**Recommended previous knowledge:** Analytical Mechanics, basic knowledge on Partial Differential Equations.
Language: English	**Person responsible for module:** apl. Prof. Dr. Jürgen Vollmer
Course frequency: two year as required, summer or winter term	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

three times	Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Phy.5631: Self-organization in physics and biology**	4 C 2 WLH

Learning outcome, core skills: **Learning outcome** : basics of self-organization, non-equilibrium dynamics, cell migration, cilia dynamics and cardiac dynamics. **Core skills:** Upon successful seminar participation, the students should be able to - accomplish literature research autonomously and therefore understand and analyse scientifc articles in the corresponding scientific context - create a presentation including physical and biological basics relevant to the scientific article and give the oral presentation - engage in critical scientific discussion	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Dynamics and Self-organization in physics and biology (Seminar)	
Examination: Presentation (approx. 45 Min.) **Examination prerequisites:** Active Participation **Examination requirements:** Elaborated presentation, which includes an introduction to the necessary basics	4 C

Admission requirements: none	**Recommended previous knowledge:** -Introduction to biophysics -Introduction to physics of complex systems
Language: English	**Person responsible for module:** Prof. Dr. Eberhard Bodenschatz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module B.Phy.5632: Current topics in turbulence research**	4 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Based on a selected topic the students shall develop a basic understanding of turbulent flows. **Core skills** : The goal of this course is to enable the students to present their research in the context of the international state of the art of the field; they also acquire the ability to engage in critical scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar	WLH
Examination: Presentation (approx. 45 Min.) **Examination prerequisites:** Active Participation **Examination requirements:** Basic understanding of turbulence; instabilities, scaling, models of turbulence, turbulence in rotating and stratified systems, turbulent heat transport, particles in turbulence	4 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of advanced continuum mechanics or electrodynamics.
Language: English, German	**Person responsible for module:** Prof. Dr. Eberhard Bodenschatz
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.Phy.5635: Introduction to Chaotic Behavior I: Dissipative Systems**	3 C 2 WLH

Learning outcome, core skills: **Lernziele:** Chaos in diskreten dynamischen Systemen, Charakterisierung durch Lyapunov-Exponenten, invariante Maße, Korrelationsfunktionen und Powerspektren; kontinuierliche dynamische Systeme und seltsame Attraktoren; Bifurkationen und Routen ins Chaos, Periodenverdopplung und Feigenbaum-Universalität **Kompetenzen:** Analytische Methoden der nichtlinearen Dynamik	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Introduction to Chaotic Behavior I: Dissipative Systems (Lecture) *Course frequency:* each winter semester	

Examination: Written examination (90 minutes) **Examination prerequisites:** none **Examination requirements:** Methoden der Nichtlinearen Dynamik	3 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Theo Geisel
Course frequency: every 4th semester; two-year as required, summer semester or winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 6
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5636: Introduction to Chaotic Behavior II: Hamiltionian Systems**	3 C 2 WLH

Learning outcome, core skills: On successful completion of this course, students shall have a command of the analytical methods of non-linear dynamics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture	

Examination: Written examination (90 minutes) **Examination prerequisites:** none **Examination requirements:** Arnold’s cat map; Hartmann-Grobmann theory; homoclinic slices; Melnikov methods; homoclinic tangles; Smale’s horseshoe map; ergodicity; Kolmogrov-Sinai entropy.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Theo Geisel
Course frequency: Two year as required / summer or winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5639: Optical measurement techniques**	3 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should ... • be able to apply light models • have understood basic optical principles of measurement • have gained an overview of optical measurement method for measuring different physical quantities at different scales	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Optical Measurement Techniques (Lecture)	
Examination: Presentation with discussion (approx. 30 min.) or oral examination (approx. 30 Min.) **Examination requirements:** Understanding optical measurement principles and methods	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik / Ansprechpartner: Dr. Nobach
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5642: Experimental Methods in Biophysics**	3 C 2 WLH

Learning outcome, core skills: After successful completion of this module, students know some fundamental physics of experimental methods used in biophysics and are able to adapt those to selected problems.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture	
Examination: oral exam (approx. 15 Min.) or talk (approx. 30 Min.) **Examination requirements:** Fundamental physics of experimental methods in biophysics, e.g. microscopy, atomic force microscopy, optical tweezers, data acquisition and analysis, image analysis, rheology	

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics
Language: English	**Person responsible for module:** Dr. Florian Rehfeldt
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5643: Seminar: Experimental Methods in Biophysics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of this module, students are able to present selected problems from literature in a seminar talk.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Experimental Methods in Biophysics	

Examination: Lecture (approx. 30 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Fundamental physics of experimental methods in biophysics, e.g. microscopy, atomic force microscopy, optical tweezers, data acquisition and analysis, image analysis, rheology.	

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics
Language: English	**Person responsible for module:** Dr. Florian Rehfeldt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5648: Theoretical and Computational Biophysics**	4 C 2 WLH

Learning outcome, core skills: This combined lecture and hands-on computer tutorial focuses on the basics of computational biophysics and deals with questions like "How can the particle dynamics of thousands of atoms be described precisely?" or "How does a sequence alignment algorithm function?" The aim of the lecture with exercises is to develop a physical understanding of those "nano maschines" by using modern concepts of non-equilibrium thermodynamics and computer simulations of the dynamics on an atomistic scale. Moreover, the lecture shows (by means of examples) how computers can be used in modern biophysics, e.g. to simulate the dynamics of biomolecular systems or to calculate or refine a protein structure. No cell could live without the highly specialized macromolecules. Proteins enable virtually all tasks in our bodies, e.g. photosynthesis, motion, signal transmission and information processing, transport, sensor system, and detection. The perfection of proteins had already been highly developed two billion years ago. During the exercises, the knowledge presented in the lecture will be applied to practical examples to further deepen and strengthen the understanding. By completing homework sets, which will be distributed after each lecture, additional aspects of the addressed topics during the lecture shall be worked out. The homework sets will be collected during the corresponding exercises.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Theoretical and Computational Biophysics (Lecture,Exercise)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Protein structure and function, physics of protein dynamics, relevant intermolecular interactions, principles of molecular dynamics simulations, numeric integration, influence of approximations, efficient algorithms, parallel programing, methods of electrostatics, protonation balances, influence of solvents, protein structure determination (NMR, X-ray), principal component analysis, normal mode analysis, functional mechanisms in proteins, bioinformatics: sequence comparison, protein structure prediction, machine learning & AlphaFold, and hands-on computer simulation.	4 C

Admission requirements: none	**Recommended previous knowledge:** • B.Phy.1571 Introduction to Biophysics • B.Phy.1561 Introduction to Physics of Complex Systems
Language: English, German	**Person responsible for module:** Hon.-Prof. Dr. Karl Helmut Grubmüller
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students:	

30	

Georg-August-Universität Göttingen **Module B.Phy.5649: Biomolecular Physics and Simulations**	4 C 2 WLH

Learning outcome, core skills: **Learning objectives:** This combined lecture and hands-on computer tutorial offers the possibility to deepen the knowledge about theory and computer simulations of biomolecular systems, particularly proteins, and can be understood as continuation of the lecture with exercises "Theoretical and Computational Biophysics" (usually taking place in the previous winter semester). During the exercises, the knowledge presented in the lecture will be applied to practical examples to further deepen and strengthen the understanding. By completing homework sets, which will be distributed after each lecture, additional aspects of the addressed topics during the lecture shall be worked out. The homework sets will be collected during the corresponding exercises. **Competencies:** Whereas the winter term lecture with exercises "Theoretical and Computational Biophysics" emphasized the principles of running and analysing simple atomistic force field-based simulations, this advanced course will broaden our view and introduce basic principles, concepts and methods in computational biophysics, particularly required to understand biomolecular function, namely thermodynamic quantities such as free energies and affinities. Further, inclusion of quantum mechanical simulation techniques will allow to also simulate chemical reactions, e.g., in enzymes.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Lecture with Exercises Biomolecular Physics and Simulations	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Basic knowledge and understanding of the material covered in the course such as: Free energy calculations, Rate Theory, Non-equilibrium thermodynamics, Quantum mechanical methods (Hartree-Fock and Density Functional Theory), enzymatic catalysis; “handson” computational calculations and simulations	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.5648 Theoretical and Computational Biophysics
Language: English, German	**Person responsible for module:** Hon.-Prof. Dr. Karl Helmut Grubmüller
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5651: Advanced Computational Neuroscience**	3 C 2 WLH

Learning outcome, core skills: Participants in the course can explain and relate biological foundations and mathematical modelling of selected (neuronal) algorithms for learning and pattern formation. Based on the the algorithms' properties, they can discuss and derive possible technical applications (robots).	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced Computational Neuroscience I (Lecture)	
Examination: Written examination (90 Min.) or oral examination (approx. 20 Min.) **Examination requirements:** Algorithms for learning: • Unsupervised Learning (Hebb, Differential Hebb), • Reinforcement Learning, • Supervised Learning Algorithms for pattern formation. Biological motivation and technical Application (robots).	3 C

Admission requirements: none	**Recommended previous knowledge:** Basics Computational Neuroscience
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 50	

Additional notes and regulations:
Hinweis: Die B.Phy.5652 kann als vorlesungsbegleitendes Praktikum besucht werden.

Georg-August-Universität Göttingen **Module B.Phy.5652: Advanced Computational Neuroscience II**	3 C 2 WLH

Learning outcome, core skills: Participants in the course can implement, test, and evaluate the properties of selected (neuronal) algorithms for learning and pattern formation.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced Computational Neuroscience: Learning and Adaptive Algorithms II	
Examination: 4 Protocols (max. 3 Pages) and Presentations (ca. 10 Min.), not graded **Examination requirements:** Algorithms for learning: • Unsupervised Learning (Hebb, Differential Hebb), • Reinforcement Learning, • Supervised Learning Algorithms for pattern formation. Biological motivation and technical Application (robots). *For each of the 4 programming assignments 1 protocol (ca. 3 pages) and 1 oral presentations (demonstration and discussion of the program, ca. 10 min).*	3 C

Admission requirements: B.Phy.5651 (can be taken in parallel to B.Phy.5652)	**Recommended previous knowledge:** Programming in C++, basic numerical algorithms, Grundlagen Computational Neuroscience B.Phy.5504: Computational Physics (Scientific Computing)
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module B.Phy.5656: Experimental work at large scale facilities for X-ray photons**	3 C 3 WLH

Learning outcome, core skills:	**Workload:**
The goal of this course is to acquire the competence to perform experiments at modern synchrotron sources and free-electron-laser sources (large scale facilities) in a team; this includes the theoretical and experimental preparation of such beam times, as well as the experiment itself and the data analysis; Competences: after successfully finishing this course, students should have the theoretical basis as well as the experimental abilities for performing modern X-ray experiments and should have applied their knowledge to specific examples from biophysics, soft matter physics and materials physics.	Attendance time: 42 h Self-study time: 48 h

Course: Lab Course *Contents*: Lab course during an x-ray beam time performed by the Institute for X-Ray Physics at a national or international source (in particular DESY, BESSY, XFEL, ESRF, SLS, NSLSII, SACLA, Diamond, Soleil, Elettra); students will already be involved in the preparation and will thus be well prepared for the experimental approach. At the x-ray source, they experience the technical/experimental as well as the theoretical part of the work; after the campaign, they learn modern methods of data analysis by direct interaction with the project leaders.	
Examination: Written report (max. 10 p.) or oral examination (approx. 30 min.) about the finished scientific project, not graded **Examination prerequisites:** Active participation at an X-ray beam time, including preparation and post-processing **Examination requirements:** Description of the scientific project, including the theoretical background and the experimental challenges and approaches; description of the data analysis and the results; discussion within the scientific context.	3 C

Admission requirements: none	**Recommended previous knowledge:** Good basic knowledge of physics (semesters 1-4) and good or very good knowledge of biophysics and x-ray optics
Language: German, English	**Person responsible for module:** Prof. Dr. Sarah Köster Prof. Dr. Tim Salditt
Course frequency: each semester; every semester, depending of availability of X-ray beam times	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4

Additional notes and regulations:
Maximum number of students: 2/beam time; if there are more applicants than slots, participants will be selected according to their experience and knowledge

Georg-August-Universität Göttingen **Module B.Phy.5657: Biophysics of gene regulation**	3 C 2 WLH

Learning outcome, core skills: **Objectives:** The students will learn basic concepts of the biophysics of gene regulation, including physical mechanisms and their physiological functions, as well as the methods for the theoretical analysis of such systems and their dynamics. **Competences:** After successful participation in the module, students should be able to analyze problems in gene regulation using the theoretical tools discussed in the lecture.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Biophysics of gene regulation (Lecture) *Course frequency:* each winter semester	WLH

Examination: written examination (60 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Physical principles of gene regulation, mechanisms of regulation, thermodynamic modelling, deterministic and stochastic dynamics	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistical physics and biophysics
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5658: Statistical Biophysics**	6 C 4 WLH

Learning outcome, core skills: **Objectives:** The students will learn basic concepts of statistical biophysics at the molecular, cellular and population level, as well as methods for the theoretical analysis of biophysical systems. **Competences:** After successful participation in the module, students should have working knowledge of basic concepts of statistical biophysics and be able to apply them to selected problems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Statistical Biophysics (Lecture with integrated problem sessions) *Course frequency:* each winter semester	WLH
Examination: written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination requirements:** Physical principles of biological systems on the molecular, cellular and population level, application of methods from statistical physics to biological and biophysical problems.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in biophysics and statistical physics
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5659: Seminar on current topics in theoretical biophysics**	4 C 2 WLH

Learning outcome, core skills: **Objectives:** The students will develop a basic understanding of current topics and methods of theoretical biophysics at the molecular, cellular and population level, based on selected examples. **Competences:** After completing this module, the students should be able to research a topic in theoretical biophysics in the scientific literature, analyse it critically and present it in a seminar talk; they also acquire the ability to engage in critical scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar on current topics in theoretical biophysics	
Examination: Presentation with discussion (Bachelor approx. 30 min., Master approx. 60 min.) **Examination prerequisites:** Active participation **Examination requirements:** Presentation of a selected research topic and critical discussion of its methods and results	4 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in biophysics and statistical physics
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4

Additional notes and regulations:

Georg-August-Universität Göttingen **Module B.Phy.5661: Biomedical Techniques in Complex Systems**	4 C 2 WLH

Learning outcome, core skills: The seminar provides an overview of current biomedical techniques applied in research and therapy. A strong orientation towards the combination of theoretical basics and practical use will be given by introducing up-to-date research results (original articles and text book material). Besides getting a deeper understanding of current biomedical techniques, the students will learn how to prepare and present up-to-date scientific results. This includes literature research, understanding of underlying methodological basics and didactic preperation (talk in front of the seminar participants).	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Biomedical Techniques in Complex Systems (Seminar)	

Examination: Oral examination(Bachelor: approx. 30 min.; Master: approx. 45 min.) **Examination requirements:** The students will elaborate and give a presentation about current biomedical techniques. The talk should include an introductory part to the underlying basics.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Luther
Course frequency: each winter semester1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations: Contact: Dr. C. Richter

Georg-August-Universität Göttingen **Module B.Phy.5662: Active Soft Matter**	4 C 2 WLH

Learning outcome, core skills: Students acquire in depth expertise in the discipline of Active Soft Matter, focussed on artificial and biological microswimmers in experiment and theory. Topics include self-propulsion at low Reynolds numbers, chemo-, electro-, magneto- , gravi- and phototaxis, active droplets, colloids and Janus particles, dynamics of flagellae and ciliae in bacteria and algae, interaction with interfaces and complex geometries, collective and swarming dynamics and active emulsions. Core skills include the independent study of literature on current research, and the condensation, presentation and discussion of a specific topic, which are vital skills pertaining to presenting your own research and its position in a wider research field. Students will practice the critical appreciation of current research in scientific discussion and receive feedback on their presentation skills.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Active Soft Matter (Seminar)	
Examination: Oral presentation (approx. 45 min.) and handout (4 pages max.) **Examination requirements:** Preparation, presentation and discussion of a current topic in active soft matter based on published literature. Active engagement in discussions on other student's presentations. Handouts must be submitted before the presentation.	4 C

Admission requirements: none	**Recommended previous knowledge:** introductory hydrodynamics and thermodynamics
Language: English, German	**Person responsible for module:** Prof. Dr. Stephan Herminghaus
Course frequency: every 3rd semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 26	

Additional notes and regulations: Contact: Dr. Oliver Bäumchen, Dr. Corinna Maaß,

Georg-August-Universität Göttingen **Module B.Phy.5663: Stochastic Dynamics**	6 C 6 WLH

Learning outcome, core skills: **Lernziele** : The students will learn basic concepts and the dynamic equations of stochastic dynamics as well as methods for their theoretical and computational analysis. **Kompetenzen** : After successful participation in the module, students should have working knowledge of basic concepts and methods of stochastic dynamics and be able to apply them to selected problems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Stochastic Dynamics (Lecture)	4 WLH
Course: Stochastic Dynamics (Exercise)	2 WLH

Examination: written examination (120 Min.) or oral examination (approx. 30 Min.) or small project with written term paper (approx. 8-10 pages) **Examination requirements:** Approaches to stochastic dynamics and dynamic equations (random walks, Master equation, Langevin equation, Fokker-Planck equation), analytical solution methods, simulation algorithms.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistical physics and programming
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5664: Excursion to DESY and the European XFEL, Hamburg**	3 C 2 WLH

Learning outcome, core skills: **Learning goals:** Basic knowledge about mission of large scale reasearch facilities, user concept and mission of DESY and European Free-electron laser (XFEL). Basic concepts of modern accelerators (super conducting and conventional), generation of synchrotron and FEL radiation, and fields of applications. **Competencies:** Overview about research and career opportunities at DESY and XFEL and how large scale facilities can be used for research and study topics. Categorize interdisciplinary information gathered at the excursion (presentations, poster session, workshop) and place it in perspective with own study background.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Excursion to DESY and the European XFEL, Hamburg (Excursion)	
Examination: oral presentation of one of the scientific activities at DESY (approx. 20min+10min discussion), Poster on a corresponding research topic, or approx. 4 pages contribution to the excursion protocol., not graded **Examination prerequisites:** Participation in the excursion and discussion of prepared lerning material **Examination requirements:** Basic knowledge about mission of large scale reasearch facilities, user concept and mission of DESY and European Free-electron laser (XFEL). Basic concepts of modern accelerators (super conducting and conventional), generation of synchrotron and FEL radiation, and fields of applications.	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.5625: Röntgenphysik
Language: English, German	**Person responsible for module:** Prof. Dr. Tim Salditt Prof. Dr. Sarah Köster
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module B.Phy.5665: Processing of Signals and Measured Data**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome** : • Errors, e.g. systematic vs. random, static vs. dynamic, error propagation • Extraction of relevant information (separating trends, stochastic data and affecting influences, such as noise) • Stationarity, statistical quantities and functions • Characteristics of estimators (e.g., sufficiency, ergodicity, bias freeness, efficiency), Cramer-Rao bound, Bessel's correction • Sampling (equidistant and non-uniform), Possibility of reconstruction, sampling theorem, aliasing • Signal transformations (e.g. cosine, Fourier, Hilbert, Laplace, wavelet, z transform) and signal decomposition (e.g. Proper Orthogonal Decomposition, Independent Component Analysis) • Correlation functions and spectra, Wiener-Khinchin theorem • preferred acquisition, sample weighting • Window functions, moving average **Core skills** : • Specification of a measurement (sampling rate, duration, amount of data) • Bias-free and most efficient signal and data processing of measured data • Programming in Matlab or Python	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Processing of Signals and Measured Data	2 WLH
Examination: Presentation or oral exam (ca. 30 Min.) **Examination requirements:** Efficient use of signal and image processing methods as well as statistical analysis methods.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Eberhard Bodenschatz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5669: Seminar on Living Matter Physics**	4 C 2 WLH

Learning outcome, core skills: **Learning objectives** : The seminar is a combination of presentations by external speakers and journal club presentations by students. The students will learn about state-of-the-art theoretical and experimental research in the physics of biological and biomimetic systems, as delivered by the invited speakers in the weekly seminars of the Department of Living Matter Physics of the MPI for Dynamics and Self-Organization. Seminars will be on a wide range of topics such as biological and artificial micro-swimmers and molecular motors; collective behaviour in cellular tissues, bacterial colonies, and dense active materials; chemical activity and self-organization at the sub-cellular scale; the physics of cellular and biomimetic membranes; or information flow and stochastic thermodynamics in living systems. The students will also learn how to conduct research, prepare and deliver journal club presentations about recently published articles in these topics. **Competences** : This course will give students a broad view of the latest research on the physics of living matter, and acquaint them with how practicing researchers communicate scientific findings to each other.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar on Living Matter Physics	
Examination: One or more journal club presentations (approx. 30 mins each) depending on the number of participating students (30 minutes)	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ramin Golestanian Dr. Jaime Agudo-Canalejo
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5670: Introduction to Magnetic Resonance Imaging**	6 C 4 WLH

Learning outcome, core skills: Introduction to magnetic resonance imaging. This includes basic knowledge about the underlying physics (e.g. nuclear spins, Larmor frequency, Zeeman effect, gyromagnetc ratio, Bloch equations, spin relaxation), technical details of an MRI scanner (e.g. static magnetic field, radio-frequency transmitter, magnetic gradient system, receiv- and transmitter coils), about acquisition and reconstruction methods and about specific medical applications (e.g. perfusion and diffusion imaging). The lecture is complemented by exercises and practical examples to strengthen the acquired knowledge.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture: Introduction to Magnetic Resonance Imaging (Lecture)	WLH
Course: Exercises: Introduction to Magnetic Resonance Imaging (Exercise)	WLH
Examination: Written exam (120 min.), oral exam (ca. 30 min.), or practical project with presentation (ca. 20 min) and written report (10 pages max.), 4 weeks of preparation time **Examination requirements:** Basic knowledge about magnetic resonance imaging (physics, MRI scanner, data acquisition, reconstruction, and applications)	6 C

Admission requirements: none	**Recommended previous knowledge:** Electrodynamics, quantum mechanics
Language: English, German	**Person responsible for module:** Prof. Dr. Tim Salditt Prof. Dr. Uecker, Prof. Dr. Boretius
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Phy.5671: Dynamics of living systems**	3 C 4 WLH

Learning outcome, core skills:	**Workload:**
The student will learn to simulate the dynamical changes observed in different living systems. Typically these systems have been already published in classical papers that develop simulations. These simulations will be reproduced as part of the course project. During the course we will use known system to translate biological functions to the underlying biochemistry. The biochemistry in turn is converted to rate equations, which typically form a system of coupled nonlinear differential equations that cannot be solved analytically. Using simple numerical approaches the students will simulate these systems to recover the behavior observed in the real, living systems. Typical examples are oscillations, pattern formations and bifurcations. The student will be able to model biological signaling cascades and diffusion problems by simple numerical approaches. This will train interdisciplinary skills, understanding of basic biological concepts, integration of physics, biology, chemistry and math. The problems are solved in groups of 2 training communication skills. Furthermore, critical analysis of the already published simulations will help understanding the strength and pitfalls of simulations in biology.	Attendance time: 56 h Self-study time: 34 h

Course: Lecture: Dynamics of Living Systems (Lecture)	1 WLH
Course: Computer Lab Course: Dynamics of Living Systems (Internship)	3 WLH
Examination: Oral presentation (ca. 30 min. including ca. 10 min. discussion), short report (max. 20 pages) on the project. **Examination prerequisites:** Active participation (computer lab). Generation of a running simulation. **Examination requirements:** The project prepared during the semester will be presented to the other students, hence all students have to be present during the presentations. A short report (15-20 pages) describing the project and the generated code, including a short discussion of the difficulties encountered.	3 C

Admission requirements:	**Recommended previous knowledge:**
none	none
Language: English, German	**Person responsible for module:** Alle Prof. Betz
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 16	

Georg-August-Universität Göttingen **Module B.Phy.5673: Cell Mechanics**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** Basics in elasticity theory and fluid dynamics, viscoelastic materials, soft matter, polymers and complex filaments, 2D and 3D networks, passive and active microrheology, fluctuations dissipation theorem, bio membranes, membrane undulations, intermembrane and electrostatic forces, simplified cells and vesicles, dynamic filaments, growth and division, traction forces, mechanosensing, Life in crowded environments, 2D tissue dynamics, jamming, 3D tissue dynamics, mechanics in development **Core skills:** The core goal is to give a deep overview of the adaptive mechanics and coordinated force generation used by cells and cellular systems to perform various complex functions. We will focus on a deep physics understanding, coming from fundamental physical laws that are rooted in conservation laws and statistical physics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Cell Mechanics (Lecture)	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Derivation of fundamental mechanics properties, including viscoelasticity, modelling of polymers and biopolymers, microrheology, membrane mechanics, 2D and 3D networks.	6 C

Course: Cell Mechanics (Exercise)	2 WLH

Admission requirements: None	**Recommended previous knowledge:** Introduction to Biophysics
Language: German, English	**Person responsible for module:** Prof. Dr. Timo Betz
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5674: Modern Image Processing**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Enabling the student to extract meaningful data from scientific images using self-written Python programs. The syllabus starts with standard techniques of image processing and ends with more recent developments coming from the field of machine learning. This is a hands-on course; a significant part of the time will be used for coding exercises. **Core skills:** Concepts covered include: image acquisition, intensity transfomations, color, spatial and morphological filters, image registration, feature extraction, Fast Fourier Transform, segmentation, Convolutional Neural Networks, autoencoder, semantic segmentation, U-Net, tomography.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture Modern Image Processing with in-class exercises and homework	
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** At least 70% of the homework points. **Examination requirements:** An image processing project, demonstrating mastery of the concepts taught in this course.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp PD Dr. Matthias Schröter
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 28	

Georg-August-Universität Göttingen **Module B.Phy.5675: Machine Learning, hands-on**	4 C 3 WLH

Learning outcome, core skills: **Learning outcome:** Enabling the student to apply machine learning algorithms to solve scientific problems using self-written Python programs. The syllabus covers both more traditional techniques and deep neural networks. This is a hands-on course, a significant part of the time will be used for coding exercises. **Core skills:** Concepts covered include: data preprocessing, linear regression, regularization, logistic regression, Bayesian reasoning in ML, Gaussian Mixture Models, decision trees, random forests, support vector machines, clustering, principal component analysis, deep neural networks, convolutional neural networks, (variational) autoencoders, natural language processing, ethics and ML.	**Workload:** Attendance time: 42 h Self-study time: 78 h

Course: Machine Learning, hands-on *Contents*: Lecture with in-class exercises and homework	3 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** At least 70% of the homework points. **Examination requirements:** a machine learning project, demonstrating mastery of the concepts taught in this course	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp PD Dr. Matthias Schröter
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 28	

Georg-August-Universität Göttingen **Module B.Phy.5676: Computer Vision and Robotics**	9 C 6 WLH

Learning outcome, core skills: After successful completion of this module, students are familiar with • the basic concepts of computer vision (CV), • low level hardware components and their functions, • building and programming a robot, and • computer vision and robotics algorithms.	**Workload:** Attendance time: 84 h Self-study time: 186 h

Course: Introduction to Computer Vision and Robotics (Lecture) *Contents*: On-Off Controller, PID Controller, Moving Average Filter, Exponential Moving Average Filter, Kalman Filter, A*, Dijkstra, RRT, Q-Learning , Inverse and Forward Kinematics, Movement Generation Methods, Smoothing and Median Filtering, Bilateral Filtering, Non-Local Means, Connected Components , Morphological Operators , Line Detection, Circle Detection, Feature Detection, Advanced image segmentation algorithms.	2 WLH
Course: Practical Course on Computer Vision and Robotics (Lecture) *Contents*: Building a robot, solving a graph problem using the robot and executing the found solution by the robot in a real-world scenario involving perception and navigation	2 WLH
Course: Tutorial on Computer Vision and Robotics (Tutorial) *Contents*: In the accompanying tutorial sessions students deepen and broaden their knowledge from the lectures	2 WLH
Examination: Written report (approx. 10 p.) and Oral Exam (approx. 30 minutes) **Examination requirements:** Written report requirements: The students must be able • to describe their project in a written report • to explain given problems and used solutions for navigation- and perception problems of robots Oral Examination requirements: The students must be able • to repeat and explain lecture material • to explain control algorithms for a robot, and • to identify and understand low level hardware components as robot sensors and actuators.	9 C

Admission requirements: none	**Recommended previous knowledge:** Programming in Python
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

three times	Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 24	

Additional notes and regulations:
Ausschluss: Dieses Modul darf nicht belegt werden, wenn B.Phy.5667 oder B.Phy.5668 schon belegt wurden.

Georg-August-Universität Göttingen **Module B.Phy.5681: Seminar CARA: Critical analysis of research articles of cell and tissue mechanics**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
After successfully finishing this course, students will be able to critically read a research paper on the subject of cell and tissue mechanics. They will be able to present such subjects in detail by identifying strengths and weaknesses. This will be done on articles that are currently only on the preprint servers. In the second part, the participants will prepare a brief presentation if a second paper where they learn how to efficiently transmit the highlights of a recent research paper. They will also acquire the ability to engage in critical scientific discussion. Master students and if interested also Bachelor students will practice the skill of Peer-Reviewing a paper by writing such a peer review of the paper they had presented in more detail.	Attendance time: 28 h Self-study time: 92 h

Course: Seminar CARA (Seminar)	2 WLH
Examination: Presentation with discussion (Bachelor approx. 30 min., Master approx. 60 min.) **Examination prerequisites:** Active participation **Examination requirements:** Soft matter, cell mechanics, rheology, tissue mechanics, active systems, membranes, cell motility	4 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics and/or Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Timo Betz
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module B.Phy.5682: Seminar: Special Topics in Cell Mechanics**	4 C 2 WLH

Learning outcome, core skills: The aim of this course is for students to gain profound knowledge in a selection of the following topics in cellular biophysics: • Biopolymers • Soft Matter • Active and Passive Rheology • Cell mechanics • Cell dynamics • Cell motility • Force generation in biological systems This will be done by presenting a short research project that will be performed in the context of the course. After successfully finishing this course, students will be able to work out or reproduce a specific question with the help of book chapters or journal publications and to present the topic in a seminar talk; they also acquire the ability to engage in critical scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar: Special Topics in Cell Mechanics (Seminar)	2 WLH
Examination: Presentation with a scientific discussion of a research project on the subject of cell mechanics (approx. 45 min.) **Examination prerequisites:** Active participation **Examination requirements:** Biopolymers, Soft Matter, Active and Passive Rheology, Cell mechanics, Cell dynamics, Cell motility, Force generation in biological systems.	4 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics and/or Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Timo Betz
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module B.Phy.5683: Theoretical Biophysics**	8 C 6 WLH

Learning outcome, core skills: **Learning outcome:** Basics of probability theory, Bayes Theorem, Brownian motion, stochastic differential equations, Langevin equation, path integrals, Fokker-Planck equation, Ornstein-Uhlenbeck processes, thermophoresis, chemotaxis, Fluctuation Dissipation Theorems, Stochastic Resonance, Thermal Ratchet, motor proteins, hydrodynamics at the nanoscale, population dynamics, Jarzynski relations, non-equilibrium thermodynamics, neural networks. **Core skills:** The core coal is to teach students fundamental theoretical concepts about stochastic systems in the widest sense, an the application of these concepts the biophysics of biomolecules, cells and populations.	**Workload:** Attendance time: 84 h Self-study time: 156 h

Course: Theoretical Biophysics (Lecture)	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Derivation of fundamental relations describing stochastic systems, derivation, handling and explanation of differential equations, derivation of analytical and approximative solutions for the various considered problems.	8 C

Course: Theoretical Biophysics (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Jörg Enderlein
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 20	

Additional notes and regulations:
Studierende, die bereits das Vorgängermodul B.Phy.5623 absolviert haben, können nicht auch das Modul B.Phy.5683 belegen (Ausschluss).

Georg-August-Universität Göttingen **Module B.Phy.5684: Modern Image Processing**	4 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Enabling the student to extract meaningful data from scientific images using self-written Python programs. The syllabus starts with standard techniques of image processing and ends with more recent developments coming from the field of machine learning. This is a hands-on course; a significant part of the time will be used for coding exercises. **Core skills:** Concepts covered include: image acquisition, intensity transfomations, color, spatial and morphological filters, image registration, feature extraction, Fast Fourier Transform, segmentation, Convolutional Neural Networks, autoencoder, semantic segmentation, U-Net, tomography.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Lecture Modern Image Processing with in-class exercises and homework	
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** At least 70% of the homework points. **Examination requirements:** An image processing project, demonstrating mastery of the concepts taught in this course.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp PD Dr. Matthias Schröter
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 28	

Georg-August-Universität Göttingen **Module B.Phy.5686: Seminar: Oral presentations at scientific conferences (focus on biophysics)**	4 C 2 WLH

Learning outcome, core skills: Upon successfully completing this course, students will be able to present a well-defined topic from the field of biophysics in an oral presentation and engage in an in-depth scientific discussion on topics in biophysics. This includes: • Identification and delimitation of a relevant topic in biophysics; • Structured literature search, including verification of the sources of information; • Preparation and presentation of a clear, engaging research talk (structure, slide design, data visualization, timing); • Formulation of constructive, well-posed scientific questions; • Answering questions by the audience in a concise and confident manner	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Oral presentations at scientific conferences (focus on biophysics) (Seminar)	
Examination: Presentation with discussion (approx. 45 min.) **Examination prerequisites:** Active participation in preparatory sessions during the semester and in rehearsal sessions with structured peer and instructor feedback. **Examination requirements:** Oral presentation during a mini-symposium organized at the end of the semester; active participation during the mini-symposium, including in-depth scientific discussion (questions and answers).	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1571: Introduction to Biophysics and/or B.Phy.1561: Introduction to Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module B.Phy.5687: Seminar: Poster presentations at scientific conferences (focus on biophysics)**	4 C 2 WLH

Learning outcome, core skills: Upon successfully completing this course, students will be able to present a well-defined topic from the field of biophysics in a poster presentation and engage in an in-depth scientific discussion on topics in biophysics. This includes: • Identification and delimitation of a relevant topic in biophysics; • Structured literature search, including verification of the sources of information; • Preparation and presentation of a clear, engaging research poster (structure, poster design, data visualization, poster flash talk); • Formulation of constructive, well-posed scientific questions; • Answering questions by the audience in a concise and confident manner.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Poster presentations at scientific conferences (focus on biophysics) (Seminar)	
Examination: Poster Flash Talk **Examination prerequisites:** Active participation in preparatory sessions during the semester and in rehearsal sessions with structured peer and instructor feedback. **Examination requirements:** Poster presentation during a mini-symposium organized at the end of the semester; active participation during the mini-symposium, including in-depth scientific discussion (questions and answers).	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1571: Introduction to Biophysics and/or B.Phy.1561: Introduction to Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module B.Phy.5714: Introduction to Solid State Theory**	6 C 6 WLH

Learning outcome, core skills: **Lernziele:** Fundamental concepts of of solid state theory, Born-Oppenheimer approximation, homogeneous electron gas, electrons in lattices, lattice vibrations, elementary transport theory **Kompetenzen:** After successful completion of the modul students should be able to describe and calculate fundamental properties of solids; understand and use the language of solid-state theory.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: lecture	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Application of fundamental concepts in solid state theory, interpretation of basic experimental observations, theoretical description of fundamental phenomena in solid state physics.	6 C

Course: exercises	2 WLH

Admission requirements: keine	**Recommended previous knowledge:** Quantum mechanics I
Language: German, English	**Person responsible for module:** Prof. Dr. Stefan Kehrein
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5717: Mechanisms and Materials for Renewable Energy**	6 C 4 WLH

Learning outcome, core skills: By participation in both lectures on photovoltaics and solar thermal energy, thermoelectrics and solar fuels students gain knowledge about the full spectrum of physical and chemical basics of renewable energy conversion. In addition, overlapping aspects of fundamental concepts and technological approaches have been reviewed. Students shall independently apply gained knowledge to acquire and present current research in the field.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Mechanismen und Materialien für erneuerbare Energien (Lecture)	
Examination: Poster presentation with oral examination (approx. 30 Min.) **Examination requirements:** Beherrschung der grundlegenden Begriffe, Fakten und Methoden. Selbständige Erarbeitung wissenschaftlicher Publikationen und deren Präsentation.	6 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to solid state physics, Introduction to materials physics
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Jooß
Course frequency: two-year as required, summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5718: Mechanisms and Materials for Renewable Energy: Photovoltaics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of this module students are familiar with physical basics or photo-electric energy conversion, are able to apply fundamental concepts and gained knowledge about important materials systems of photovoltaics. In addition, important experimental methods as well as current and future technological concepts have been reviewed. Students shall independently apply gained knowledge to acquire and present current research in the field.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Mechanismen und Materialien für erneuerbare Energien: Photovoltaik (Lecture)	
Examination: Poster presentation with oral examination (approx. 30 Min.) **Examination requirements:** Beherrschung der grundlegenden Begriffe, Fakten und Methoden. Selbständige Erarbeitung wissenschaftlicher Publikationen und deren Präsentation.	4 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to solid state physics, Introduction to Materials physics
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Jooß
Course frequency: zweijährig im SoSe	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5719: Mechanisms and Materials for Renewable Energy: Solar heat, Thermoelectric, solar fuel**	4 C 2 WLH

Learning outcome, core skills: Physical and chemical basics of light and heat conversion to electrical and chemical energy. • In particular:Mechanisms of solarthermic, thermoelectric, electro- and photochemical energy conversion. • Important model systems and materials. • Outlook in current research activities. Students shall independently apply gained knowledge to acquire and present current research on relevant systems.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Mechanismen und Materialien für erneuerbare Energien: Solarthermie, Thermoelektrik, solarer Treibstoff (Lecture)	
Examination: Posterpresentation with oral examination (approx. 30 Min.) **Examination requirements:** Beherrschung der grundlegenden Begriffe, Fakten und Methoden. Selbständige Erarbeitung wissenschaftlicher Publikationen und deren Präsentation.	4 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to solid state physics, Introduction to Materials Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Jooß
Course frequency: two-year as required, summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5720: Introduction to Ultrashort Pulses and Nonlinear Optics**	3 C 2 WLH

Learning outcome, core skills: After successful completion of this Module students will be able to work with advanced concepts, phenomena and models of ultrashort pulses and their applications in nonlinear optics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Introduction to Ultrashort Pulses and Nonlinear Optics (Lecture)	
Examination: Oral (approx. 30 min.) or written (90 min.) **Examination requirements:** Matter-light interaction; rate equations; continuous and pulsed laser operation; mode coupling; properties of ultrashort pulses; nonlinear susceptibility and nonlinear response of bound electrons; frequency doubling; parametric amplification; self-focusing; self-phase modulation; high-harmonic generation	3 C

Admission requirements: none	**Recommended previous knowledge:** • Elektrodynamic (Experimentalphysics II) • Optic and waves (Experimentalphysics III)
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Dirk Mathias
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5723: Hands-on course on Density-Functional calculations 1**	3 C 3 WLH

Learning outcome, core skills:	**Workload:**
Students will be able to perform first-principles electronic-structure and ab-initio molecular dynamics simulations, understand the results and judge their accuracy. They will have a basic knowledge of the underlying methods. They will know simple methods of anticipating and describing electronic and atomic structure and chemical bonds.	Attendance time: 40 h Self-study time: 50 h

Course: Hands-on course on Density-Functional calculations 1 (Block course) *Contents*: 1. Theoretical foundation of first-principles calculations (lecture 10 h) 2. Simple concepts of electronic structure and chemical binding (lecture 10 h) 3. Hands on Course with the CP-PAW code (Exercise 20 h)	
Examination: oral (approx 30 min), presentation (30 min) or report **Examination prerequisites:** regular participation **Examination requirements:** The student is able to describe topics from the course and to respond to questions. A presentation or a report will describe a specified home project.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Bloechl
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5724: Hands-on course on Density-Functional calculations 1+2**	6 C 6 WLH

Learning outcome, core skills: Students will be able to perform first-principles electronic-structure and ab-initio molecular dynamics simulations, understand the results and judge their accuracy. They will have a basic knowledge of the underlying methods. They will know simple methods of anticipating and describing electronic and atomic structure and chemical bonds.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Hands-on course on Density-Functional calculations 1+2 (Block course) *Contents*: 1. Theoretical foundation of first-principles calculations (lecture 10 h) 2. Simple concepts of electronic structure and chemical binding (lecture 10 h) 3. Hands on Course with the CP-PAW code (Exercise ~22 h) 4. Advanced topics of first-principles calculations (lecture ~8 h) 5. Hands on Course: guided projects (~26 h) 6. Seminar on guided projects (~12 h)	
Examination: oral (approx 30 min), presentation (30 min) or report **Examination prerequisites:** regular participation **Examination requirements:** The student is able to describe topics from the course and to respond to questions. A presentation or a report will describe a specified project.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Bloechl
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5725: Renormalization group theory and applications**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand concepts of field theory and renormalization group in classical and quantum systems. **Core skills:** Students will be able to use the basics of field theory, including perturbation theory and renormalization, and be able to apply these tools to physical problems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Renormalization group theory and applications (Lecture)	4 WLH
Course: Renormalization group theory and applications (Exercise)	2 WLH
Examination: Written or oral examWritten exam (120 min) or oral exam (approx. 30 min) **Examination prerequisites:** None **Examination requirements:** Theoretical concepts of field theory, renormalization techniques, and their physical interpretation.	6 C

Admission requirements: none	**Recommended previous knowledge:** • Thermodynamik und statistische Mechanik • Quantenmechanik I
Language: English, German	**Person responsible for module:** Prof. Dr. Matthias Krüger
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module B.Phy.5802: Symmetries in Quantum Field Theory**	3 C 2 WLH

Learning outcome, core skills: **Lernziele** : Klassische Symmetrien, Gruppen und Darstellungen. Symmetrien in der Quantentheorie, Automorphismen und Derivationen, unitäre Operatoren und Generatoren, Implementierbarkeit und spontane Symmetriebrechung. Anwendungen in der Quantenfeldtheorie. **Kompetenzen** : Differenzierung zwischen unterschiedlichen Symmetrie-Konzepten, Kenntnis der angemessenen mathematischen Begriffsbildungen und übergreifenden Methoden.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung (Blockveranstaltung, eine Semesterhälfte) (Lecture)	2 WLH

Exactly one of the following examinations must be successfully completed:	
Examination: Term Paper (max. 15 pages)	3 C
Examination: Oral examinationMündliche Prüfung (approx. 30 minutes)	3 C

Examination requirements: Behandlung von Aufgaben und Kenntnis grundlegender Zusammenhänge	

Admission requirements: none	**Recommended previous knowledge:** B.Phy.202 Feldtheorie und Quantentheorie
Language: English	**Person responsible for module:** Prof. Dr. Andreas Tilgner
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5805: Quantum field theory I**	6 C 6 WLH

Learning outcome, core skills: **Acquisition of knowledge:** Quantization of free relativistic wave equations (Klein-Gordon and Dirac); General properties of quantum fields; Interaction with external sources; Perturbation theory and basics of renormalization theory; Quantum Electro Dynamics and abelian gauge symmetry. **Competencies:** The students shall be familiar with the basic concepts and methods of Quantum Field Theory. They can apply them to explicit examples.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Quantum field theory I (Lecture)	4 WLH
Course: Quantum field theory I (Exercise)	2 WLH

Exactly one of the following examinations must be successfully completed:	
Examination: Written examination (120 minutes) **Examination requirements:** Solution of concrete problems treated in the lecture course. Explanation of notions and methods of Quantum Field Theory.	6 C
Examination: Oral examination (approx. 30 minutes)	6 C

Admission requirements: none	**Recommended previous knowledge:** Quantum mechanics I, II, Classical Field theory
Language: English	**Person responsible for module:** Prof. Laura Covi
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 2
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module B.Phy.5808: Interactions between radiation and matter - detector physics**	3 C 3 WLH

Learning outcome, core skills: After successful completion of this module, students should be familiar with a conceptional understanding of different particle detectors and the underlying interactions. They should be familiar with physics processes of particle or radiation detection in high energy physics and related fields and applications.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Interactions between radiation and matter - detector physics (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Mechanism of particle detection; interactions of charged particles and photons with matter; proportional and drift chambers; semiconductor detectors; microstrip and pixel detectors; Cherenkov detectors; transition radiation detectors; scintillation (organic crystals and plastic scintillators); electromagnetic calorimeter; hadron calorimeter.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.Phy.5809: Hadron-Collider-Physics**	3 C 3 WLH

Learning outcome, core skills:	**Workload:**
Learning Objectives and Competencies: After successful completion of this module, students should be well-versed in the challenges and concepts of experimental physics at modern hadron colliders.	Attendance time: 42 h Self-study time: 48 h

Course: Hadron-Collider-Physics (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Introduction to particle physics; Kinematics at hadron colliders; historical overview and experimental features of hadron colliders such as PS, SPS, Tevatron, HERA, and LHC; Typical detectors and their functionalities for hadron collider physics; Structure of the proton and measurements thereof; Factorization theorem; Total and differential hadron cross sections; Diffraction; Soft underlying event, multiple interactions, and pile-up; QCD and Jet Physics; Angular correlations; Physics of vector bosons; Z-Asymmetry and W mass measurements; W charge asymmetry; W/Z cross sections; Physics of the top quark; Search for supersymmetric particles as candidates of dark matter; Searches for new physics in exotic models; Experimental methods for data analysis.	

Admission requirements:	**Recommended previous knowledge:**
none	Introduction to Nuclear and Particle Physics
Language:	**Person responsible for module:**
German, English	Prof. Dr. Arnulf Quadt
Course frequency:	**Duration:**
every 4th semester; irregular	1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**
three times	Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students:	
30	

Georg-August-Universität Göttingen **Module B.Phy.5810: Physics of the Higgs boson**	3 C 3 WLH

Learning outcome, core skills: After successful completion of this module, students should possess a deep understanding of the Higgs mechanism, the properties of the Higgs boson, and experimental methods (concepts and concrete examples) used in investigations of the Higgs sector.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Physics of the Higgs boson (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Review of the Standard Model of particle physics; The Higgs mechanism and the Higgs potential; properties of the Standard Model Higgs boson; Experimental methods in the search for the Higgs boson at LEP, Tevatron and LHC; Discovery of the Higgs boson; Measurement of the Higgs boson couplings and other properties; Two Higgs Doublet Modells and extended Higgs sectors (in particular, the MSSM); Searches for Higgs bosons beyond the Standard Model.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: every 4th semester; irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5811: Statistical methods in data analysis**	3 C 3 WLH

Learning outcome, core skills: After successful completion of this module, students should be well-versed in the theoretical foundations of statistical methodology used in data analysis. This is complemented with concrete examples where statistical analysis is performed using the ROOT software package (a free C++ type software package for data analysis, which runs on Linux, Windows, and Mac operating systems).	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Statistical methods in data analysis (Lecture)	
Examination: oral exam (approx. 30 min.) or written exam (120 min.) **Examination requirements:** Concepts, methods, can concrete examples of statistical methods in data analysis: Introduction and description of data; theoretical probability density functions, including Gaussian, Poisson, and multi-dimensional distributions; parameter estimation; maximum likelihood method (and examples); chi^2 method and chi^2-distribution; optimization; hypothesis tests; classification methods; Monte Carlo methods; unfolding.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5812: Physics of the top-quark**	3 C 3 WLH

Learning outcome, core skills: Learning Objectives and Competencies: After successful completion of this module, students should be familiar with the properties and interactions of the top-quark as well as the experimental methods for its studies.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Physics of the top-quark (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Concepts and specific experimental methods for the discovery and studies of the top-quark. Introduction to particle physics of quarks, discovery of the top-quark, top-antitop production (theory and experiment); electroweak production of single-top quarks; top-quark mass; electric charge and spin of top-quarks; W-helicity in top-quark decay; top-quark decay in the standard modell and beyond; sensitivity to new physics; top-quark physics at the ILC, recent results of top-quark physics.	3 C

Admission requirements: keine	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: every 4th semester; irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module B.Phy.5814: Particle Physics 3 - of and with leptons**	6 C 6 WLH

Learning outcome, core skills: **Lernziele** : Entdeckung der Leptonen, Eigenschaften der Leptonen, schwache Wechselwirkung und V-A Struktur, neutrale Ströme, Standardmodell der Teilchenphysik, e+e- Physik bei LEP, Fermionpaar-Produktion bei verschiedenen Schwerpunktsenergie, Lineshape des Wirkungsquerschnitts am Z-Pol, Anzahl leichter Neutrino-Generationen, Vorwärts-Rückwärts-Asymmetrie, Tau-Polarisation, e+e- Physik bei ILC, (g-2)myon, Netrinos und Neutrinooszillationen, solare Neutrinos, athmosphärische Neutrinos, long-baseline Experimente, Neutrino-Fabriken, Neutrino Masse, neutrinoloser Doppel-Betazerfall der Neutrinos **Kompetenzen** : Die Studierenden sollen die Eigenschaften und Wechselwirkungen der Leptonen erlernen und sich mit den experimentellen Methoden und Experimente zu deren Entdeckung bzw präzisen Untersuchung vertraut machen.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Particle Physics 3 - of and with leptons	4 WLH
Course: Particle Physics 3 - of and with leptons	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Konzepte und Experimente zu Entdeckung, Eigenschaften und Wechselwirkung der Quarks	6 C

Admission requirements: keine	**Recommended previous knowledge:** Einführung in die Kern-/Teilchenphysik (B.Phy.504)
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 5
Maximum number of students: 30	

Additional notes and regulations: Bachelor/Master ab 5. FS (KT)

Georg-August-Universität Göttingen **Module B.Phy.5815: Seminar on Introductory Topics in Particle Physics**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden anhand von Publikationen oder Buchkapiteln sich in Fragestellungen zu Themen der modernen Elementarteilchenphysik einarbeiten und in einem Seminarvortrag vorstellen können. Sie erwerben außerdem die Fähigkeit zu kritischer wissenschaftlicher Diskussion.	Attendance time: 28 h Self-study time: 92 h

Course: Seminar	
Examination: Vortrag (ca. 30 Min.) mit schriftlicher Ausarbeitung (max. 20 S.) **Examination prerequisites:** Aktive Teilnahme **Examination requirements:** Selbständige Erarbeitung wissenschaftlicher Sachverhalte und deren Präsentation.	4 C

Admission requirements: keine	**Recommended previous knowledge:** Einführung in die Kern-/Teilchenphysik
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Phy.5901: Advanced Computer Simulation**	6 C 4 WLH

Learning outcome, core skills: The goal of the module is to introduce advanced simulation techniques and algorithms (preferably in C/C++) for particle-based simulations and continuum modeling, and to enable the students to choose suitable computational methods for solving problems in biophysics and complex systems as well as materials science.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Computer Simulation	
Examination: Oral exam (approx. 30 min.) or oral presentation with discussion (approx. 30 min.), 2 weeks time for preparation or project work at home with a final report (max. 15 pages) **Examination requirements:** Implementation and usage of advanced algorithms to solve problems in computational physics, Understanding of the algorithms. Topics: (i) advanced Monte-Carlo algorithms (force-bias MC, non-Boltzmann sampling at phase coexistence, histogram reweighting and free-energy techniques), (ii) advanced Molecular-Dynamics simulations in various ensembles (stochastic and deterministic thermostats, integrators for Browian and Langevin dynamics), (iii) partial differential equations (PDE) for continuum models (semi-implicit and pseudospectral techniques, stochastic PDEs)	6 C

Admission requirements: none	**Recommended previous knowledge:** Programming course, course lecture „CWR“
Language: English	**Person responsible for module:** Prof. Dr. Marcus Müller
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 6; Master: 1 - 4
Maximum number of students: 40	

Additional notes and regulations:

Georg-August-Universität Göttingen **Module B.Phy.7601(Bio): Computational Neuroscience: Basics**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
Goals: Introduction to the different fields of Computational Neuroscience: • Models of single neurons, • Small networks, • Implementation of all simple as well as more complex numerical computations with few neurons. • Aspects of sensory signal processing (neurons as ‚filters'), • Development of topographic maps of sensory modalities (e.g. visual, auditory) in the brain, • First models of brain development, • Basics of adaptivity and learning, • Basic models of cognitive processing. **Kompetenzen/Competences:** On completion the students will have gained… • …overview over the different sub-fields of Computational Neuroscience; • …first insights and comprehension of the complexity of brain function ranging across all sub-fields; • …knowledge of the interrelations between mathematical/modelling methods and the to-be-modelled substrate (synapse, neuron, network, etc.); • …access to the different possible model level in Computational Neuroscience.	Attendance time: 28 h Self-study time: 92 h

Course: Vorlesung	
Examination: Written examination (45 minutes) **Examination requirements:** Actual examination requirements: Having gained overview across the different sub-fields of Computational Neuroscience; Having acquired first insights into the complexity of across the whole bandwidth of brain function; Having learned the interrelations between mathematical/modelling methods and the to-be-modelled substrate (synapse, neuron, network, etc.) Being able to realize different level of modelling in Computational Neuroscience.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 2 - 6; Master: 1 - 4

Georg-August-Universität Göttingen **Module B.Phy.8001: Lecture Series in Physics for Data Scientists**	8 C 6 WLH

Learning outcome, core skills: Practical aspects of data acquisition and analysis in different specializations in physics (for example: astrophysics, biophysics, solid-state physics, statistical physics, and/or particle physics) A short introduction to the motivation of various measurements and simulation techniques should be provided.	**Workload:** Attendance time: 84 h Self-study time: 156 h

Course: Lecture Series in Physics for Data Scientists	
Examination: Oral examination (approx. 30 minutes) or written report (max. 15 S.) **Examination prerequisites:** At least 50% of the homework/exercises must be solved successfully **Examination requirements:** Understanding of concepts and various examples given in the lecture series. One should be able to explain the physical context of data acquisition, simulation, and analysis.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Stanley Lai
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.Pol.10: Model United Nations**	8 C 3 WLH

Learning outcome, core skills: Die Studierenden reflektieren internationale Beziehungen, transnationale Probleme und deren mögliche Lösungen durch Simulationen von Komitees der Vereinten Nationen (VN). Die Studierenden • lernen die Geschichte Organisation und Funktionsweisen der VN kennen; • wenden theoretische Grundbegriffe der internationalen Politik (beispielsweise Institution, Governance, Krieg, Frieden, Compliance, Hegemonie, kollektive Sicherheit, Souveränität) in einer Simulationsumgebung an; • arbeiten sich in die Außenpolitik und multilateralen Beziehungen des von ihnen vertretenen Nationalstaats ein; • beherrschen vertiefte Kenntnisse im Völkerrecht; • beherrschen Techniken der Rhetorik und der diplomatischen Verhandlung und Moderation in politischen Kontexten in englischer Sprache.	**Workload:** Attendance time: 42 h Self-study time: 198 h

Course: Seminar und Planspiel/Simulation zu den Vereinten Nationen (Seminar)	3 WLH
Examination: Portfolio (max. 20 pages)	8 C

Examination requirements: Die Studierenden erbringen den Nachweis darüber, dass sie in der Lage sind, aktuelle internationale Probleme aus nationalstaatlicher Perspektive zu analysieren und dies in Positions- und Strategiepapiere umzusetzen. Sie können auf Englisch Plenarreden schreiben und halten und an informellen Verhandlungsprozessen aktiv teilnehmen.	

Admission requirements: Keine	**Recommended previous knowledge:** B.Pol.101 und B.Pol.102.2
Language: English	**Person responsible for module:** Prof. Dr. Anja Jetschke
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 3
Maximum number of students: 35	

Additional notes and regulations:
Die aktive Teilnahme an den Lehrveranstaltungen wird dringend empfohlen. Hierzu ist auch *Die gemeinsame Erklärung von Lehrenden und Lernenden* zur Bedeutung der *aktiven und regelmäßigen Teilnahme für dialogorientierte Lernformen* zu beachten.

Georg-August-Universität Göttingen **Module B.SK-Phy.9001: Papers, Proposals, Presentations: Skills of Scientific Communication**	4 C 2 WLH

Learning outcome, core skills: Goals: Handling of different presentation media (written and oral); presenting complex facts to experts and laymen; skills of communication and scientific discussion	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Papers, Proposals, Presentations: Skills of Scientific Communication (Seminar)	2 WLH
Examination: Lecture (approx. 30 minutes) **Examination prerequisites:** Active participation **Examination requirements:** Independent preparation and scientific publications and their presentation Time for preparation 4 weeks	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Ansgar Reiners
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: 18	

Additional notes and regulations: Einbringbar in den Wahlbereich nicht-physikalisch.

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0082: Seminar Corporate Valuation**	6 C 2 WLH

Learning outcome, core skills: After successfully completing this course, the students are familiar with basic theoretical and practical problems in corporate valuation based on capital market models. After an introduction into the topic, students know how to work for themselves on theoretical or practical problems in the field of corporate valuation. Moreover, the students know how to apply their knowledge in real case studies as well as present and critically discuss their results.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Corporate Valuation (Seminar) *Contents*: 1. Analyzing fundamentals of corporate valuation 2. Financing strategies and cost of capital 3. Valuation methods 4. Case studies	2 WLH
Examination: Term paper (max. 12 pages) and presentation (ca. 50 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: Students are expected to prove their knowledge of scientific methods by writing a thesis as well as presenting their results in groups.	

Admission requirements: B.WIWI-ECON.0003 Work with AI (compulsory for all students in the Bachelor's programmes in Business Administration, Business Information Systems and Business and Human Resource Education in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-BWL.0002 Management Accounting, B.WIWI-BWL.0111 Financial Accounting, B.WIWI-BWL.0112 Corporate Finance
Language: English	**Person responsible for module:** Prof. Dr. Stefan Dierkes
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0087: International Marketing**	6 C 2 WLH

Learning outcome, core skills: After successful attendance the students understand the foundations of international marketing as well as the diverse environments of global markets. They are able to explain and the central elements of the international decision-making process, such as country and entry mode selection. Moreover, they are able to analyze and compare the attractiveness of different countries and recommend tailored marketing program strategies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: International Marketing (Lecture) *Contents*: • Introduction to international marketing • Social and cultural environments • Political, legal, and regulatory environments • Assessing global marketing opportunities • International marketing strategy (country selection, entry-modes, international marketing mix) • Branding across cultures The course conveys theoretical knowledge which is enriched by case studies. Specific contents are international trade developments, culture and values (incl. approaches by Hofstede, Inglehart, & Schwartz), political risk assessment, legal environments, international marketing research, competitive analysis and strategy (incl. Porter's Five Forces), emerging markets, entry strategy (incl. Uppsala model vs. born global approach), country selection, market entry modes, international marketing mix, and the country-of-origin effect.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The written exam assesses students' understanding of the course content as well as their ability to apply their knowledge to case studies. **Examples:** • Comparing different approaches of cultural difference assessment • Assessing a country's competitive environment • Recommending entry modes for different countries	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Yasemin Boztug
Course frequency: each winter semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0088: International Business**	6 C 2 WLH

Learning outcome, core skills: International Business examines how firms operate across national borders and how global economic, institutional, and cultural environments influence managerial decision-making. After completing this course, students will understand the core concepts, theories, and frameworks of international business and be able to apply them to real-world challenges. Students will be able to analyze the drivers and barriers of globalization, evaluate international market entry strategies, and assess how political, economic, legal, and cultural environments shape firms' competitive behavior. They will develop skills in interpreting global trends, managing international operations, and understanding the implications of multinational enterprise activities for firms, employees, and societies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: International Business (Lecture) *Contents*: Globalization and the expansion of firms into foreign markets have made understanding international business essential for managers. The course introduces students to key theories and practical issues that arise when firms operate internationally. Topics typically include: • The international business environment (political, economic, legal, cultural) • International business and trade theories • Global strategy and organization of international operations • Foreign market entry strategies • International marketing • International finance • International human resource management • Current trends: e.g. digital globalization, sustainability in international business, emerging markets Applied tasks during class, including case studies, familiarize students with the analysis of international markets, strategic decision-making in multinational enterprises, and interpreting global business data.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: • Questions and case studies based on lecture content, • demonstration of knowledge of key theories, concepts, and strategic tools in international business, • ability to analyze and critically reflect on international management challenges and firms' responses to global environments.	

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Fabian Jintae Froese
Course frequency: irregluar	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0089: Corporate Financial Management**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the course students should be able to: • understand and analyze different financial instruments (debt, equity, and hybrids) available to a corporation, • describe the debt characteristics and understand the global environment in which debt is issued, • critically assess different financing alternatives, • demonstrate a sound knowledge of different capital structure theories, • understand and critically assess the process of capital structure optimization, • understand the components of the cost of capital and why it might change over time, • critically apply the obtained knowledge to several realistic problem sets.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Corporate Financial Management (Lecture) *Contents*: 1. Introduction to corporate financial management What are the advantages of the corporate form? What is the goal of corporate financial management? What actions can managers take to increase shareholder value? 2. Equity financing Repetition: Dividend discount model for common stocks CAPM Theories about dividend payments and stock repurchases Understanding the IPO process and theories explaining underpricing 3. Debt financing Review: corporate bond valuation Yield to maturity and yield curves Covenants, bond markets and call provisions Securitization, MBS and the financial crisis 4. Capital structure & cost of capital Capital structure theories: MM (w/ taxes), trade-off, pecking-order, etc. Determining the cost of debt (before and after tax, w/ floatation costs) Determining the cost of equity (beta (un-)levering, w/ & w/o taxes Calculating the WACC 5. Hybrid financing Valuation and use of Preferred stock, warrants & convertibles	2 WLH
Course: Corporate Financial Management (Tutorial) *Contents*: In the accompanying tutorial students deepen and broaden their knowledge from the lectures.	2 WLH

Examination: Written examination (60 minutes)	6 C

Examination requirements:	
• demonstrate a profound knowledge of equity, debt and hybrid instruments available to corporations, • document an understanding of how strategic financing decisions affect company value, • demonstrate the ability to analyze and evaluate the effect of capital structure changes on the cost of capital and on company value, • show a profound understanding of methods and techniques to manage a company's financing needs and tactical financing decisions.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-OPH.0004 Corporate Finance B.WIWI-BWL.0006 Capital Markets and Valuation
Language: English	**Person responsible for module:** Prof. Dr. Olaf Korn
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0097: Financial Intermediation**	6 C 2 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand the underlying mechanisms of financial intermediation, the importance of asymmetric information and moral hazard, • explain and critically discuss the functions and services financial intermediaries provide and the role they play in the financial system, • apply methods to analyze and mitigate the various risks faced and posed by financial intermediaries, • understand the interactions between nonfinancial and financial companies, the financial system's interconnectedness and vulnerabilities, • critically assess and explain the different causes that led to the Great Financial Crisis, • understand and discuss major change drivers to financial intermediation, such as financial innovation and green finance, • apply their knowledge to critically take part in related policy discussions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Financial Intermediation (Lecture) *Contents*: 0. Basic Concepts **1. Theoretical Framework of Financial Intermediation** 1.1 Functions of Financial Intermediaries 1.2 The Variety of Financial Intermediaries 1.3 The Financial System 1.4 Fractional Reserve Banking 1.5 Further Properties of Financial Intermediaries **2. Major Banking Risks** 2.1 Overview 2.2 Interest Rate Risk 2.3 Liquidity Risk 2.4 Credit Risk 2.5 Credit Rationing **3. Financial Crisis and the Future of Financial Intermediation** 3.1 Securitization 3.2 The Funding of the Bank 3.3 Financial Crises 3.4 Financial Innovation	2 WLH

3.5 Green Finance *Course frequency:* each summer semester	
Course: Financial Intermediation (Exercise) *Contents*: In the accompanying practice sessions students deepen and broaden their knowledge from the lectures. The practice sessions will be integrated into the lecture. *Course frequency:* each summer semester	
Examination: Written examination (60 minutes)	6 C

Examination requirements: • Demonstrate a profound knowledge of the functions financial intermediaries provide and the underlying reasons for their existence, • document an understanding of viable reasons for the promotion of economic growth through the financial system, • demonstrate the ability to explain the different risks faced by financial intermediaries, • show a profound understanding of methods and techniques used to identify and mitigate these risks, • critically assess the different causes that led to the Great Financial Crisis, • and demonstrate an understanding of major change drivers in financial intermediation.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-BWL.0006 Capital Markets and Valuation, B.WIWI-BWL.0112 Corporate Finance
Language: English	**Person responsible for module:** Dr. Paolo Krischak
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-BWL.0105: Project Seminar Entrepreneurship Simulation**	6 C 2 WLH

Learning outcome, core skills: After successful participation in the module, students know and understand important processes in the successful founding of a business. This concerns, in addition to the knowledge of the decisions to be made, in particular a deeper understanding of the uncertainty entrepreneurs face when starting a business, as well as the difficulty of taking the right decisions to successfully establish a start-up in the market.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Project Seminar Entrepreneurship Simulation (Seminar) *Contents*: In the first part of the course, students learn concepts of how to position a startup in the market. Subsequently, they take over the role of entrepreneurs in a start-up (in a simulation) and decide in groups on important parameters, such as in production and sales. In doing so, students have to react to decisions of competitors and changing market and environmental conditions in several periods. Finally, students critically reflect their decision making.	2 WLH
Examination: Term paper (max. 12 pages per person) in group work **Examination prerequisites:** Regular attendance and presentation (approx. 15 minutes) in group work	6 C

Examination requirements: Students demonstrate a deep understanding of the concepts of entrepreneurship taught in the course. Furthermore, they critically reflect on the decisions made during the simulation and their impact on the success of the startup.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in business administration
Language: English	**Person responsible for module:** Prof. Dr. Matthias Schulz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-QMW.0004: Meta-Research in Economics**	6 C 4 WLH

Learning outcome, core skills: The students learn to evaluate and discuss the reliability of published empirical findings in economics. Moreover, they gain first insights in the replication of empirical studies using the statistical software R.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Meta-research in economics (Lecture) *Contents*: The lecture discusses the incentive system of academic publishing that favors statistically significant and hypothesis-confirming estimates. Various types of *p* -hacking are analyzed for both experimental and observational research. Moreover, empirical evidence of biases in published findings is presented and discussed. Finally, an overview of replications in economics is given and the students learn why replications are essential to ensure the reliability of published empirical findings. Topics: 1. Incentives in academic publishing 2. p-hacking and publication bias 2.1 Experimental research 2.2 Observational research 3. Empirical evidence of biases 3.1 Discontinuities in published p-values 3.2 Low power and exaggerated effect sizes 4. Models of empirical research 5. Replications in economics	2 WLH
Course: Meta-research in economics (Exercise) *Contents*: The exercise starts with an introduction to the statistical software R. The exercise follows the topics discussed in the lecture and deepens the understanding of these topics by providing and discussing tasks to be solved in R. At the end of the exercise, students replicate published findings of important articles that use quasi-experimental designs.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The students show that they understand the incentive system of academic publishing resulting in *p* -hacking and publication bias. They demonstrate that they understand the econometric background of p-hacking and they show that they have deep knowledge of the empirical evidence of biases in published findings in economics. Moreover, they show knowledge of characteristics of replications in economics and how replications are conducted.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0007: Introduction to Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz Dr. Stephan Bruns
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 5

Georg-August-Universität Göttingen **Module B.WIWI-QMW.0012: Introduction to Bayes and Statistical Learning**	6 C 4 WLH

Learning outcome, core skills: After successful participation in the module the students are capable of choosing the statistical approach for a scientific question. They can apply advanced statistical methods in established softwarepackages and implement simpler models. Hence they are capable of analysing a dataset from scratch autonomously.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to Bayes and Statistical Learning (Lecture) *Contents*: • (Repetition) basic inference (frequentistist Estimation/Likelihoodinference) • (Repetition) simpler regression models (lineare models, generalised linear models) • Introduction to Bayesian inference • Introduction to statistical learning • More complex statistical models (e.g. P-Splines, Mixed Models, Quantile regression, GAMLSS...)	2 WLH
Course: Introduction to Bayes and Statistical Learning (Exercise) *Contents*: In the practical session, knowledge will be extended and intensified theoretically and practically (in R).	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Submission of 50% of the exercise sheets	6 C

Examination requirements: • Demonstration of the capability to analyse complex datasets, • evidence of knowledge in implementing the learned modelling approaches, • evidence of theoretical understanding the learned inference strategies.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-QMW.0001 Linear Models and/or B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Elisabeth Bergherr
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6

Georg-August-Universität Göttingen **Module B.WIWI-QMW.0014: International Development Finance: Applied Research Using Stata**	6 C 3 WLH

Learning outcome, core skills: International Development Finance encompasses the financial mechanisms and strategies employed to support the economic growth and social progress of developing countries. This includes the study of various forms of financial aid, investment, and policy interventions aimed at addressing issues such as poverty reduction, infrastructure development, and sustainable economic growth. This seminar studies current issues in international development finance and equips students with the tools to carry out their own independent research project. Upon successful completion of this course, students: • have acquired knowledge on selected topics in international development finance, • are able to review the relevant literature, to critically reflect on it, and to undertake their own complementary empirical research, • are able to carry out a regression analysis in Stata, • are able to prepare a well-argued piece of research, well written and consistent in format, • have acquired the skills to present the outcome of this research in class and to engage in a discussion with other students and the teaching staff, • are able to critically reflect on the research papers by other students.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: International Development Finance: Applied Research Using Stata (Seminar) *Contents*: In this seminar, students carry out their own original research to assess current issues in international development finance. For example, students investigate the aid allocation decisions of donor governments or the loan portfolio of recipient governments. They review the relevant literature, formulate hypotheses, collect data, and run econometric regressions in Stata to study the cross-country correlates of the outcome of interest. Finally, students present their results in an empirical term paper and present them in class. Seminar structure: • introductory meeting • mid-term meeting • final meeting	2 WLH
Course: International Development Finance: Applied Research Using Stata (Exercise) *Contents*: An accompanying Stata course provides students with a refresher on the preparation of datasets and regression analysis using Stata. Students also have the possibility to attend two Q&A sessions to discuss problems and share experiences with their ongoing term project. Stata course structure:	1 WLH

• Introduction to Stata Part 1 • Introduction to Stata Part 2 • Stata Q&A • Stata Q&A	
Examination: Term paper (max. 15 pages) with presentation (approx.15 minutes) and supplementary report (peer discussions of two papers at the final meeting, approx. 5 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students show their ability to review the academic literature about a given topic in international development finance, formulate hypotheses, and test them empirically using Stata. In addition, students demonstrate their ability to communicate their results in an empirical term paper (max. 15 pages) and in the context of a presentation (approx. 15 minutes) in class. Finally, students show that they can critically assess empirical economic research by acting as discussants to the presentations of other participants.The grading consists of three components: Term paper [70%] and presentation of the term paper [20%] and peer discussions of two papers at the final meeting [10%].	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics, B.WIWI-VWL.0041 Development Economics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-QMW.0019: Advanced Statistical Inference (Likelihood & Bayes)**	6 C 4 WLH

Learning outcome, core skills: Upon completion of the module, the students have acquired the following competencies: • foundations and general properties of likelihood-based inference in statistics, • bayesian approaches to statistical learning and their properties, • implementation of both approaches in statistical software using appropriate numerical procedures.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Statistical Inference (Likelihood & Bayes) (Lecture) *Contents*: The likelihood function and likelihood principles, maximum likelihood estimates and their properties, likelihood-based tests and confidence intervals (derived from Wald, score, and likelihood ratio statistics), expectation maximization algorithm, Bootstrap procedures (estimates for the standard deviation, the bias and confidence intervals), Bayes theorem, Bayes estimates, Bayesian credible intervals, prior choices, computational approaches for Bayesian inference, model choice, predictions	2 WLH
Course: Advanced Statistical Inference (Likelihood & Bayes) (Exercise) *Contents*: likelihood function and likelihood principles, maximum likelihood estimates and their properties, likelihood-based tests and confidence intervals (derived from Wald, score, and likelihood ratio statistics), expectation maximization algorithm, Bootstrap procedures (estimates for the standard deviation, the bias and confidence intervals), Bayes theorem, Bayes estimates, Bayesian credible intervals, prior choices, computational approaches for Bayesian inference, model choice, predictions	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 20 minutes)	6 C

Examination requirements: The students demonstrate their general understanding of likelihood-based and Bayesian inference for different types of applications and research questions. They know about the advantages and disadvantages as well as general properties of both approaches, can critically assess the appropriateness for specific problems, and can implement them in statistical software. The exam covers contents of both the lecture and the exercise class.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-QMW.0015 Mathematics for Economics B.WIWI-QMW.0016 Statistics and Data Science 1: Basics of Applied Statistics
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib

Course frequency:	**Duration:**
each winter semester	1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**
twice	4 - 5

Additional notes and regulations:

The actual examination will be published at the beginning of the semester.

The module cannot be taken if the module M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes) has already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0009: Labor Economics**	6 C 3 WLH

Learning outcome, core skills: • Know the core economic concepts of labor economics and understand the main drivers of labor supply and demand as well as the concept of labor market equilibrium. • Understand the factors that determine individual wages as well as the overall wage structure in an economy. • Understand the role of human capital and the determinants of human capital investment decisions. • Are able to discuss further selected issues in labor economics, including labor mobility, the role of labor unions, labor market discrimination, incentive pay and unemployment. • Can perform a basic analysis of individual survey data in a statistical program in order to investigate the determinants of individual wages and employment and can interpret its results.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Labor Economics (Lecture) *Contents*: The course in Labor Economics targets advanced bachelor students of economics. The lecture presents and discusses core concepts of labor economics and introduces students to the analysis of labor markets. It introduces the microeconomic model of the individual labor supply decision as well as the model of firms' labor demand and derives the labor market equilibrium. It also introduces a number of further topics in the realm of labor economics, including the individual decision on human capital investment and schooling, various theoretical reasons for wage differentials, the labor market consequences of migration and the determinants of unemployment. The lecture complements the theoretical concepts by descriptive facts on the German labor market and discusses the models in the light of recent empirical evidence. Lecture plan: 1. Introduction 2. The basics of labor supply 3. Extensions of labor supply 4. Labor demand 5. Labor market equilibrium 6. Human capital 7. Wage differentials 8. Migration 9. Unemployment	2 WLH
Course: Labor Economics (Exercise) *Contents*: The lectures are accompanied by blocks of practical sessions that take place in a CIP-pool and aim at introducing students to the analysis of individual labor market data.	1 WLH

The CIP-pool exercises will especially focus on determinants of employment and wage differences.	
Examination: Written examination (90 minutes) **Examination prerequisites:** Hand-in of two problem sheets (of pass quality). The problems will refer to the content introduced in the practical sessions.	6 C

Examination requirements: In the exam, students are required to demonstrate an understanding of basic concepts of labor economics and to apply the acquired knowledge to current policy issues. The hand-ins required as examination prerequisites will test the general understanding of the empirical concepts introduced in the practical sessions.

Admission requirements: none	**Recommended previous knowledge:** Bachelor courses in microeconomics, econometrics and statistics
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: not limited	

Additional notes and regulations: The course takes place as a block course. The exam will be written before Christmas.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0069: Urban Economics**	6 C 3 WLH

Learning outcome, core skills: By the end of the course the students should: • Know the core economic concepts of urban economics and understand the main drivers and challenges of urban development. • Understand the agglomeration forces driving the development of cities. • Understand the main challenges that cities are facing (with respect to land use and zoning, segregation and living conditions, transportation, education, crime, environment, housing and local government, etc.). • Be able to identify problems of urban development and discuss them using basic insights from economic theory, proposing possible policy responses if necessary. • Be familiar with sources for data and policy information that can be used to investigate various dimensions of urban and regional development.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Urban Economics (Lecture) *Contents*: Using basic concepts and modelling tools of urban economics, the lecture discusses the spatial distribution of economic activity and people in general and the challenges faced by cities in particular. It highlights the forces of economic agglomeration, the determinants of location choice and the spatial distribution of cities as well as the determinants of urban population growth and city size. It introduces the concept of land rent and uses it to motivate land-use patterns in general and within cities. It also discusses a number of further policy relevant topics, including the choice of residential neighborhoods, social segregation, the provision of housing, education and urban transportation, the spatial concentration of criminal activities, environmental problems as well as issues of local government. Beyond presenting the theoretical concepts, the lecture also examines related global evidence. 1. Why do cities exist? 2. The forces of agglomeration 3. City size 4. Land rent and land use patterns 5. Neighborhood choice 6. Urban growth and labor markets 7. Zoning and growth controls 8. Urban transportation 9. Urban education and crime 10. Housing and local government	2 WLH
Course: Urban Economics (Exercise) *Contents*: The practical part consists of student presentations of self-selected empirical papers within the field of urban economics. Presentations should describe the empirical evidence and link it to theories/arguments discussed in the lecture. A session aiding student preparation will be offered.	1 WLH

Examination: Written examination (90 minutes) **Examination prerequisites:** One presentation of a recent empirical paper related to urban economics (max. 20 minutes). Depending on class size, presentations may take place in groups.	6 C

Examination requirements: In the exam, students are required to demonstrate an understanding of basic concepts of urban economics and to apply the acquired knowledge to current policy issues. They should be able to reproduce theoretical arguments with the use of diagrams and to use these arguments to describe and discuss the main challenges of city development. The examination prerequisites require students to discuss orally a specific problem of urban development by applying theories and insights from the lecture.

Admission requirements: none	**Recommended previous knowledge:** bachelor courses in Microeconomics bachelor courses in Statistics
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0070: International Economic Policy**	6 C 3 WLH

Learning outcome, core skills: The course introduces core areas of international economic policy. After completing the course, the students will acquire following competences: • they will become familiar with the economic drivers of international cooperation (or the absence of it) in various areas, including international cooperation w.r.t. trade and environmental policy, • they will be able to discuss and evaluate economic arguments and related empirical evidence with respect to current issues of international economic policy.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: International economic policy (Lecture) *Contents*: The lecture covers a range of issues related to international policy mainly along two dimensions of policy cooperation: international trade policy and international environmental policy. Finally, the course discusses the role of supra-national institutions. ***Course schedule:*** 1. What is globalization? 2. Trade and the income distribution 3. Trade under increasing returns to scale 4. The instruments of trade policy 5. The political economy of trade policy 6. Global environmental policies: The basics 7. International environmental cooperation	2 WLH
Course: International economic policy (Exercise) *Contents*: The course is accompanied by 6 practical sessions (of 90 minutes) that discuss issues related to the course material (in form of problem solving and applying the economic models to the discussion of current issues). A block of further practical sessions is organized as a one-day block session with a simulated policy debate where students take part in a simulated international policy discussion and represent specific interest groups in the discussion. Here active student participation is required.	1 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Hand-in of a short position paper (2 essays of 1 page each) in preparation of the simulated policy debate. Active participation in the simulated policy debate (presence is obligatory).	6 C

Examination requirements: The exam tests the understanding of economic arguments addressing the drivers of international cooperation as well as the arising problems. It requires the replication of	

theoretical arguments (mostly relying on diagrams) and the application of theories to current problems of international economic policy cooperation. The examination pre-requisites test the understanding of the theoretical concepts and the students' ability to build economic arguments in form of position papers and oral discussion.	

Admission requirements: none	**Recommended previous knowledge:** bachelor courses on Microeconomics and Macroeconomics, International Economics
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0074: Indian Economic Development**	6 C 3 WLH

Learning outcome, core skills: The goal of this course is to provide students with a comprehensive overview of economic development in the context of India. By the end of the course, students will be able to: • give an overview of economic development in India in the second half of the 20thcentury, • critically evaluate policy changes and their impact on economic growth, • develop an in-depth understanding of policies and progress in India's agriculture, industry, foreign trade, population, and human capital.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Indian Economic Development (Lecture or Seminar) *Contents*: The course will introduce students to the main developments in recent Indian economic development and history. It will discuss the impact of colonialism on India's economy and shed light on trends and developments in economic planning, economic growth, population, agriculture, employment and human capital. The course will equip students with a profound understanding of the set-up of India's economy in the second half of the 20th century. Specifically, the course will cover the following topics: • Colonial Legacy in India, • Economic planning, • Economic growth and distribution, • India's demographic transition, • Economic development in the agricultural sector, • Employment trends, • Education and human capital.	2 WLH
Course: Indian Economic Development (Exercise) *Contents*: Each tutorial covers topics discussed in the lecture in more depth and gives students the opportunity to clarify remaining questions.	1 WLH
Examination: Portfolio	6 C

Examination requirements: • Familiarity with major economic policy debates in India, • demonstrate an ability to link the practice with economic theory, • ability to reflect on various policy actions and their implications.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer

Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 18	

Additional notes and regulations:

Maximum number of students in the case of a seminar: 18.

In the case of a lecture, there is no limit to the number of students.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0076: International Trade: Theory and Policy**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • give an overview of the core theoretical concepts explaining international trade patterns by means of various sources of trade flows like different technologies or factor endowments, • understand and apply the concepts of comparative and absolute advantage, • analyze the effects of international trade on the trading partners with respect to (i) their production and overall welfare, (ii) the reallocation of resources in the production process, (iii) the change in nominal factor prices, and (iv) on changes in the purchasing power of consumers, • evaluate and critically reflect the gains and losses of international trade, • evaluate the consequences of different trade policies like tariffs and subsidies.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: International Trade: Theory and Policy (Lecture) *Contents*: **I. The Ricardian model** Analysis of the trade equilibrium in a neoclassical model explaining inter-industry trade with one production factor and two goods. Analysis of the trade effects on production and consumption, wages and overall welfare gains from trade. Extension to continuum of goods. **II. The Specific-Factors model** The welfare effects and distributional effects of international trade in a medium-run model, in which not all factors of production are mobile between sectors. **III. The Heckscher-Ohlin model** Analysis of the trade equilibrium in a neoclassical model with two production factors, both of which are mobile across sectors. Analysis of trade effects on production and consumption, factor prices, and of distributional effects as implied by the Stolper-Samuelson Theorem. Analysis of the effects of changes in resource endowments as implied by the Rybczynski Theorem. Empirical test of the Heckscher-Ohlin model. **IV. International Migration** Graphical analysis of the welfare effects and the distributional effects of international migration in the medium run and in the long run. **V. Imperfect competition in international trade** Mathematical and graphical analysis of the Krugman model with increasing returns to scale and monopolistic competition as an explanation of intra-industry trade. Non-formal extension of the Krugman model to the case of heterogeneous technologies across firms. **VI. Trade policy under perfect competition** Graphical analysis of the introduction of tariffs and quotas to the trade equilibrium under perfect competition on economic welfare. Analysis of partial and general equilibrium effects.	2 WLH

VII. Trade policy under imperfect competition Graphical analysis of the introduction of tariffs and quotas to the trade equilibrium under monopolistic market power on economic welfare.	
Course: International Trade: Theory and Policy (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a profound knowledge of the core theoretical concepts in international trade, • show the ability to analyze welfare and distributional effects of international trade using graphical and mathematical tools, • show the ability to analyze the effects of trade policies.

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0113 Microeconomics I B.WIWI-VWL.0001 Microeconomics II
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0079: Application of Game Theory to Development Economics**	6 C 2 WLH

Learning outcome, core skills: This lecture aims at examining development issues using elementary game theory. Participants will learn how to apply different solution concepts to explain decision of strategic interaction that affect development outcomes.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Application of Game Theory to Development Economics (Lecture) *Contents*: • Development traps and coordination games, • rural poverty development and the environment, • risk, solidarity networks and reciprocity, • agrarian institutions, • savings, credit and microfinance, • social learning and technology adoption, • property rights, governance and corruption, • conflict, violence and development, • social capital.	2 WLH
Examination: Term Paper (max. 3 pages)	2 C
Examination: Oral Presentation (approx. 20 minutes)	4 C

Examination requirements: Students should demonstrate knowledge of solution concepts in game theory. They should be able to model a situation of strategic interaction using game theory.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0080: Economics of Monetary Union**	6 C 2 WLH

Learning outcome, core skills: After this course, the students are able to apply the knowledge they gained from previous macroeconomics courses to the specific situation of monetary unions. They have a deep understanding of potential costs and benefits attached to the formation of a monetary union in general. Furthermore, they gain a deep understanding of the specific situation in which the member states of the European Monetary Union are in at the moment. Especially, the roots and consequences of the so-called “Euro-crisis” have to be understood by the students, so that they are able to explain and discuss them.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Economics of Monetary Union (Lecture) *Contents*: **Part One: Costs and Benefits of Monetary Union** 1: The costs of common currency 2: The theory of optimum currency areas: a critique 3: The benefits of a common currency 4: Costs and benefits compared **Part Two: Monetary Union** 5: The fragility of incomplete monetary union 6: Transition to a monetary union 7: How to complete a monetary union? 8: Leaving a monetary union 9: The European central bank 10: Monetary policy in the Eurozone 11: Fiscal policies in monetary unions 12: The euro and financial markets…	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Ability to apply macroeconomic theory and concepts to monetary unions, • profound understanding of costs and benefits attached to the formation of a monetary union, • deep understanding of the specific situation in which the member states of the European Monetary Union are in at the moment. Especially, the roots and consequences of the so-called Euro-crisis have to be understood by the students, so that they are able to explain and discuss them.	

Admission requirements:	**Recommended previous knowledge:**
none	B.WIWI-VWL.0114 Macroeconomics I

Language: English	**Person responsible for module:** Dr. Markus Ahlborn
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0081: Firms and Workers in International Markets**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • give an overview of different internationalisation strategies of firms, • understand and analyse theoretical concepts explaining trade patterns and optimal behavior of firms in international markets, • evaluate the implications of globalisation on firm behavior, consumers and welfare, • apply and critically assess theoretical concepts and empirical methods to explain trade patterns regarding product differentiation, competition, price effects and market frictions.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Firms and Workers in International Markets (Lecture) *Contents*: 1. Introduction to international trade Overview of trade theory and empirical facts about patterns of international trade and multinational activity of firms. 2. Product differentiation in international markets Discussion of different types of product differentiation and related market strategies of internationally active firms. Application of microeconomic concepts and evaluation of their empirical relevance to explain trade patterns. 3. The role of imperfect competition in international trade Mathematical and graphical analysis of trade models with imperfect competition. Welfare effects of dumping in international markets and related evidence. 4. Firm heterogeneity in international markets Discussion of empirical patterns on firms' export behavior. Analysis of theoretical concepts to explain the performance of firms in export markets. 5. Optimal strategies of multinational enterprises Empirical and theoretical analysis of internationalisation strategies that might complement or substitute exporting: foreign direct investments (FDI), offshoring and outsourcing. 6. Product quality and price effects in export markets Analysis of theoretical concepts that allow for differences in product quality, and application to pricing behavior in export markets. 7. The effects of frictions in international markets Effects of trade costs, as well as labour market and credit market frictions on the internationalisation strategies of firms. Discussion of related empirical evidence and application to economic shocks. *Course frequency:* each summer semester	2 WLH

Course: Firms and Workers in International Markets (Exercise) *Contents*: In the tutorial, students deepen and broaden their knowledge by applying both theoretical concepts and empirical methods developed in the lecture. *Course frequency:* each summer semester	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a profound knowledge of microeconomic concepts to analyse different internationalisation strategies of firms, • show the ability to evaluate the effects of globalisation on firm behavior, consumers and welfare, using graphical and mathematical tools, • students should be able to apply and critically assess theoretical as well as empirical methods to explain trade patterns.

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0113 Microeconomics I, B.WIWI-VWL.0001 Microeconomics II, B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Jun.-Prof. Dr. Florian Unger
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0083: Economics of Migration**	6 C 4 WLH

Learning outcome, core skills: Students gain an overview of the economics of migration by learning the micro- and macroeconomic foundations as well as important empirical facts. They will gain basic, applied knowledge of the most important empirical methods used to study the topic, including their strengths and weaknesses, and will thus learn to critically assess research. Students will also gain an understanding how science progresses in economics and how it can be used to inform policy.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economics of Migration (Lecture) *Contents*: This course provides a basic understanding of the economics of migration in order to better understand the economic impact of migration and the policy challenges that are related. Starting with an introduction and theoretical models of migration, students will receive an introduction into the necessary econometric toolkit. This will then be used to show how theory can be tested and how to study the effects of immigration, emigration, as well as the effects of migration on migrants themselves. Discussing migration policy will be a regular feature throughout the course.	2 WLH
Course: Economics of Migration (Exercise) The tutorial is used to deepen the understanding of concepts and empirical methodsused in the lecture, to learn how to read scientific papers, and to learn how to writepolicy reports.	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Portfolio **Examination requirements:** With the policy report, students are expected to demonstrate their ability to synthesize, present and discuss academic research results for a policy audience. Depending on class size, presentation of the policy report can also take place in groups. Students should be prepared to demonstrate the following: A good understanding of the most important theories of migration, empirical approaches to the analysis of migration, and knowledge of specific topics covered.	6 C

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0114 Macroeconomics I, B.WIWI-VWL.0002 Macroeconomics II, B.WIWI-VWL.0006 Economic Growth and Development (earlier or simultaneous enrolment recommended), B.WIWI-VWL.0007 Econometrics (earlier or simultaneous enrolment recommended)
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs

Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:
Explanation Portfolio: Policy report (submit a maximum of 3 pages; presentation in the tutorial; discussion of another policy report).

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0084: Introduction to Global Health**	6 C 3 WLH

Learning outcome, core skills: The goal of this course is to give students an overview of the most important topics and concepts in the field of Global Health. Learning goals: • be able to describe key concepts in Global Health, including disease burden, risk factors, and population health measurement, • understand the relationship between health and economic development, • be able to describe major epidemiological patterns and trends across the globe, • understand the importance of public health policies and health system design.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Introduction to Global Health (Lecture) *Contents*: The course provides a broad introduction to Global Health, which is a growing and interdisciplinary field at the intersection of public health and development economics. A key focus of the course will be on epidemiological patterns and trends across the globe as well as relevant public health concepts. Moreover, we will study major drivers for health disparities across countries and discuss the role of public health policies and health system design. While we will make reference to the situation in Germany, low- and middle-income countries will receive most of the attention.	2 WLH
Course: Introduction to Global Health (Tutorial) *Contents*: Each tutorial covers topics discussed in the lecture in more depth and gives students the opportunity to clarify remaining questions.	1 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Students should demonstrate their familiarity with key concepts and topics discussed in the lecture. In addition, students will be expected to have read the background literature mentioned in the course.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Additional notes and regulations:

The module cannot be taken if module B.WIWI-SDS.0014 PLanetary Health has already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0085: Poor Economics**	6 C 3 WLH

Learning outcome, core skills: The goal of this course is to provide students with an understanding of poverty and decision-making in a context of poverty from a micro-level perspective. By the end of the course, students will be able to: • describe key concepts of poverty such as poverty traps, • understand problems linked with poverty from a micro-level perspective, • describe potentials solutions to these problems, • understand how randomized controlled trials can be used to study poverty.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Poor Economics (Seminar) *Contents*: The key focus of the course lies on problems that come with poverty and approaches to solve these problems. We will look specifically at the use of field experiments and how these can help us understand and tackle problems linked with poverty. The framework is set by two books by Abhijeet V. Banerjee and Esther Duflo, “Poor Economics – A Radical Rethinking of the Way to Fight Global Poverty” and “Good Economics for Hard Times”, which cover diverse topics including nutrition, health, education, fertility, risk and insurance, microfinance and savings, and political issues in low- and middle-income countries. Each topic will then be discussed using recent papers from the development economics literature. While each student will work on a specific topic for the seminar paper, group discussions will ensure each student to get an overview of poverty-related problems in the other fields. The course will mainly focus on low- and middle-income countries.	2 WLH
Course: Poor Economics (Exercise) *Contents*: Practical exercises related to the topics discussed in the seminar give students the opportunity to deepen and enhance their understanding of the seminar’s content.	1 WLH
Examination: Term paper (max. 10 pages) and presentation (approx. 20 minutes)	6 C

Examination requirements: In their seminar paper and presentation, students should demonstrate their familiarity with key concepts and topics discussed in the lecture as well as an ability to critically discuss these topics. In addition, students will be expected to have read the background literature mentioned in the course.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** none

Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 18	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0086: Fridays for Sustainability: Behavioral Economic Aspects Related to Environment and Sustainability Challenges**	6 C 4 WLH

Learning outcome, core skills: In this course on behavioral aspects relating to environment and sustainability issues, students acquire the following competencies: • they are familiar with the representation of social interaction in game-theoretic models, • they are able to analyze simple game-theoretic models, • they know typical behavioral patterns and explanations of actual human behavior in those games, • they understand, which factors may impact behavior in those games, • they are familiar with decision-theoretical models and so-called behavioural anomalies, • they are able to apply theoretical models and behavioral economic outcomes to questions related to the environment and sustainability.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Fridays for Sustainability: Behavioral Economic Aspects Related to the Environment and Sustainability (Lecture) *Contents*: In the lecture we deal with the modelling and analysis of current issues in relation to environmentally conscious and sustainable behaviour. The lecture comprises three parts. The first part deals with external effects, contributions to public goods and the (sustainable) use of resources (commons). In addition to state intervention possibilities -- with an iron (sovereign), invisible (market self-organising) or immaterial (morally appealing) hand, we look at possibilities of cooperation and self-organisation from a behavioural economics perspective and discuss how institutional design can have a positive effect in this regard. The second part addresses factors that can play a role in the acceptance of new technologies (such as electric cars). From a behavioural economics perspective, coordination problems and network effects are addressed. In this part we also discuss the role of trust in society and the role of reputation systems in digital markets. The third part is dedicated to the empirical investigation and theoretical modelling of individual consumption decisions for sustainable products, the role and measurement of norms and norm compliance, and the perspective of the economic theory of politics.	2 WLH
Course: Fridays for Sustainability: Behavioral Economic Aspects Related to the Environment and Sustainability (Exercise) *Contents*: The exercise, deepens the contents of the lecture	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate basic knowledge of the mathematical methods for analyzing individual decisions and social interaction in the dilemma and coordination situations treated, • prove the fundamental knowledge of behavioral economic results (stylized facts) in the areas treated.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0088: Empirical Macroeconomics**	6 C 4 WLH

Learning outcome, core skills: Upon graduation, students acquire the following skills: • estimation and diagnosis of most important time series models,extensions to more complex scenarios, • work with real-world data using the acquired programming skills in MATLAB or a comparable numerical programming language, • verify the robustness of their results by applying statistical test procedures, • present and discuss the research results.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Empirical Macroeconomics (Lecture) *Contents*: 1. Time Series models / Box-Jenkins approach 2. VAR and SVAR 3. Cointegration and VECM 4. Modeling volatility with GARCH	2 WLH
Course: Empirical Macroeconomics (Exercise) *Contents*: In the accompanying practice sessions students deepen and broaden their knowledge from the lectures. Students are introduced to statistical software MATLAB or a comparable numerical programming language and solve programming exercises. Empirical project: writing code to analyze real world data and present the results in class.	2 WLH
Examination: Project work (max. 15 pages) or written examination (90 minutes) **Examination prerequisites:** Up to three submission homework items; length of up to five typewritten pages each (condition for admission to the examination is the achievement of 60% of the total number of attainable points) or group work (30 minutes presentation).	6 C

Examination requirements: • Demonstrate a profound knowledge of the core theoretical concepts in empirical macroeconomics, • differentiate between various econometric models for financial and macroeconomic data, • understand core concepts of time series modeling, • be able to apply learned models and testing procedures to real world data.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics or B.WIWI-QMW.0001 Linear Models
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger

Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0091: Introduction to Gender and Development**	6 C 3 WLH

Learning outcome, core skills: Students are introduced to key theoretical and empirical approaches to understanding gender inequality in developing countries, including gender gaps in education, health and mortality, employment, time-use, and governance. Students learn about different approaches to conceptualize and measure gender gaps and are introduced to analyzing policies to tackle gender inequality.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Introduction to Gender and Development (Lecture) *Contents*: In the lecture the students will discuss the different mechanism behind gender based inequality, including gender gaps in education, health and mortality, employment, time-use, and governance. It will be introduced to different approaches to conceptualize and measure gender gaps and how to analyze policies to tackle gender inequality.	2 WLH
Course: Introduction to Gender and Development (Tutorial) *Contents*: The tutorial is used to deepen understanding of concepts used in the lecture, discuss relevant literature, and apply concepts and methods developed in the lecture.	1 WLH
Examination: Written examination (90 minutes) or term paper (max. 15 pages)	6 C

Examination requirements: In the term paper, students demonstrate their ability to develop a coherent argument on a particular issue of gender inequality in developing countries. In the exam, students demonstrate their ability to understand theory and empirical assessments of gender inequality, including measurement, and policy issues.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0092: Economics of the Very Long Run**	6 C 2 WLH

Learning outcome, core skills: The students familiarize themselves with a topic in the economics of growth and long-run development from the recent literature and are able to summarize the academic discussion of this topic in a short essay (max. 15 pages). Furthermore, students are able to critically discuss ongoing research of this topic and to present their work in class.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Economics of the Very Long Run (Seminar) *Contents*: In the seminar a topic of long-run economic development is investigated, which has recently attracted attention in academia and is subject to an ongoing academic debate. The time frame ranges from the origin of the first human to today and beyond. Further information on the current topic and the relevant literature is announced in the syllabus, which can be downloaded from the webpage of the Chair of Macroeconomics and Development: http://www.uni-goettingen.de/en/88544.html Past topics included: Genes, Memes, and Development, Culture and Economics, Death and Development, Inequality, Economics of Terrorism, Economics of Islam, Education and Development.	2 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) and supplementary report (approx. 5 minutes) **Examination prerequisites:** Regular attendance in the seminar and attendance at the introductory meetings	6 C

Examination requirements: The students are required to summarize and explain one or two research papers, critically discuss the results, and relate the paper(s) to research in that field and to the scientific debate in the literature.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-QMW.0015 Mathematics for Economics B.WIWI-VWL.0114 Macroeconomics I B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0093: Current Topics in Macroeconomics**	6 C 2 WLH

Learning outcome, core skills: During the seminar students familiarize themselves with a macroeconomic topic from the recent literature. After a successful participation students are able to summarize the academic discussion of this topic in a short essay (max. 15 pages) and are able to critically discuss ongoing research of this topic and to present their work in class.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Current Topics in Macroeconomics (Seminar) *Contents*: In the seminar a macroeconomic topic is investigated, which has recently attracted attention in academia and is subject to an ongoing academic debate. Further information on the current topic and the relevant literature is announced in the syllabus, which can be downloaded from the webpage of the Chair of Macroeconomics and Development: http://www.uni-goettingen.de/en/88544.html Past topics included Migrants and Refugees, The Chinese Economy, Cities and Development, Income and Wellbeing.	2 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) and supplementary report (approx. 5 minutes) **Examination prerequisites:** Attendance in the seminar and attendance at the introductory meetings	6 C

Examination requirements: • The students demonstrate that they are able to summarize and explain one or two research papers, • the students demonstrate that they have the ability to critically discuss the results, • the students demonstrate that they manage to relate the paper(s) to research in that field and to the scientific debate in the literature.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-QMW.0015 Mathematics for Economics B.WIWI-VWL.0114 Macroeconomics I B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0094: Topics in Monetary Economics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course students have achieved following competences: • understand questions in monetary economics and communicate their knowledge both in written form and verbally, • understand empirical econometric models that are used in the literature and explain how econometric techniques are used to answer relevant research questions in monetary economics, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Topics in Monetary Economics (Seminar) *Contents*: In this seminar students review the literature on selected topics in monetary economics. Topics include the effectiveness of monetary policy, both conventional and unconventional and the international dimension of monetary policy. The selected topics cover developments in the recent academic literature on monetary economics.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students should be able to elaborate on a recent topic independently. This process involves literature research, scientific work and writing and the appropriate oral presentation of the written paper.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0095: Topics in Empirical Macroeconomics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course students have achieved following competences: • understand questions in empirical macroeconomics and communicate their knowledge both in written form and verbally, • understand empirical econometric models that are used in the literature and explain how econometric techniques are used to answer relevant research questions in macroeconomics, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations .	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Topics in Empirical Macroeconomics (Seminar) *Contents*: In this seminar students review the literature on selected topics in empirical macroeconomics. Topics include the empirical analysis of business cycles, the interdependence of economies and the empirical investigation of economic policy.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students should be able to elaborate on a recent topic independently. This process involves literature research, scientific work and writing and the appropriate oral presentation of the written paper.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0103: Topics of Long-Run Development**	6 C 3 WLH

Learning outcome, core skills: The students: • are able to carry out independent research in the relevant scientific literature in the field of long-run development, • are able to grasp and understand the topic by applying theoretical and empirical economic approaches, • are able to produce a written paper on the topic of long-run development that meets academic standards, • know and apply the principles of good scientific work, • are able to present the topic rhetorically convincingly to all participants of the seminar, • are able to answer questions on the topic of long-run development in a subsequent discussion, • are able to critically reflect on the socio-political relevance of the issue.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Topics of Long-Run Development (Seminar) *Contents*: The seminar deals with current topics in the field of long-run development. Seminar papers are assigned on changing topics in this area. Students work independently on one of the topics using current literature and write a term paper on this topic that meets academic standards. They present the topic to the other participants and then take part in a critical discussion. Programme of the seminar: • Presentation of the topics • Introduction to the basics of academic work • Writing a term paper • Presentation of the results and critical discussion	3 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students must demonstrate that they are able to independently write an academic term paper on a complex topic in the field of long-run development. They must also prepare a presentation based on their term paper, give a scientific presentation, and critically discuss their topic in a group. They must also be able to participate in critical discussions on related topics based on the presentations of other participants.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	**Recommended previous knowledge:** none

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregluar	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0104: Topics of Global Health**	6 C 3 WLH

Learning outcome, core skills: The students: • are able to carry out independent research in the relevant scientific literature in the field of global health, • are able to grasp and understand the topic by applying theoretical and empirical economic approaches, • are able to produce a written paper on the topic of global health that meets academic standards, • know and apply the principles of good scientific work, • are able to present the topic rhetorically convincingly to all participants of the seminar, • are able to answer questions on the topic of global health in a subsequent discussion, • are able to critically reflect on the socio-political relevance of the issue.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Topics of Global Health (Seminar) *Contents*: The seminar deals with current topics in the field of global health. Seminar papers are assigned on changing topics in this area. Students work independently on one of the topics using current literature and write a term paper on this topic that meets academic standards. They present the topic to the other participants and then take part in a critical discussion. Programme of the seminar: • Presentation of the topics • Introduction to the basics of academic work • Writing a term paper • Presentation of the results and critical discussion	3 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students must demonstrate that they are able to independently write an academic term paper on a complex topic in the field of global health. They must also prepare a presentation based on their term paper, give a scientific presentation, and critically discuss their topic in a group. They must also be able to participate in critical discussions on related topics based on the presentations of other participants.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	**Recommended previous knowledge:** none

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0105: Topics of Poverty and Inequality**	6 C 3 WLH

Learning outcome, core skills: The students: • are able to carry out independent research in the relevant scientific literature in the field of poverty and inequality, • are able to grasp and understand the topic by applying theoretical and empirical economic approaches, • are able to produce a written paper on the topic of poverty and inequality that meets academic standards, • know and apply the principles of good scientific work, • are able to present the topic rhetorically convincingly to all participants of the seminar, • are able to answer questions on the topic of poverty and inequality in a subsequent discussion, • are able to critically reflect on the socio-political relevance of the issue.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Topics of Poverty and Inequality (Seminar) *Contents*: The seminar deals with current topics in the field of poverty and inequality. Seminar papers are assigned on changing topics in this area. Students work independently on one of the topics using current literature and write a term paper on this topic that meets academic standards. They present the topic to the other participants and then take part in a critical discussion. Programme of the seminar: • Presentation of the topics • Introduction to the basics of academic work • Writing a term paper • Presentation of the results and critical discussion	3 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students must demonstrate that they are able to independently write an academic term paper on a complex topic in the field of poverty and inequality. They must also prepare a presentation based on their term paper, give a scientific presentation, and critically discuss their topic in a group. They must also be able to participate in critical discussions on related topics based on the presentations of other participants.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	**Recommended previous knowledge:** none

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0106: Current Topics in Behavioral Economics**	6 C 2 WLH

Learning outcome, core skills: Students will gain the ability to read and understand theoretical and empirical papers in Behavioral Economics. They can classify and critically analyze important contributions and current developments. Students, will have the knowledge of special concepts, mechanisms and methods (theories, experimental research) commonly applied in Behavioral Economics, with the help of which specific current issues (e.g., Behavioral Finance, Behavioral Organizational Economics) can be adequately addressed. To this end, they learn to research, understand, critically evaluate and discuss the scientific literature on the topic. In seminars, students learn in particular to develop a research question, to write a paper on the topic in accordance with academic standards and to present their work rhetorically and convincingly to an academic audience. In the final discussion, they learn to answer questions on the topic and to reflect critically on the problem.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Current Topics in Behavioral Economics (Seminar) *Contents*: The seminar deals with current topics in the field of Behavioral Economics, such as Behavioral Finance, Behavioral Organizational Economics, or the effects of gender differences on market results. The aim of the seminar is to gain a better understanding of the effects of psychological factors that influence the actions of decision-makers and market outcomes. In the course of the seminar, students will give a presentation based on the seminar paper they developed for the course. The presentation of own results and the discussion in the course extend the independent work on a scientific question by actively dealing with related topics.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Independent processing (max. 15 pages) of a current issue from Behavioral Economics in written form. Presentation of the results as part of a lecture (approx. 20 minutes). Students provide evidence that they have in-depth knowledge of the topic and are able to critically evaluate their results.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Apl.-Prof. Dr. Holger Rau

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0108: Current Topics in International Trade**	6 C 2 WLH

Learning outcome, core skills: After a successful completion of the course students have achieved the following competencies: • understand complex questions in international economics independently and communicate their knowledge both in written form and verbally, • understand theoretical and/or empirical models that are used in the current literature and explain how the models are applied to answer specific research questions, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Current Topics in International Trade (Seminar) *Contents*: In this seminar, students review the theoretical and empirical literature concerning central current issues in the research area of international trade. Issues covered in the seminar can relate to: • distributional effects of international trade • international production linkages • trade policy and further related questions.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance in the seminar	6 C

Examination requirements: The students should be able to elaborate on a recent topic independently. This process involves literature research, academic writing and the appropriate oral presentation of the written paper. The students provide evidence that they have in-depth knowledge of the question and are able to critically assess their results.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 5
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0109: Introduction to Natural Language Processing in Macroeconomics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course, students have achieved the competencies to answer the following questions: • How to obtain and prepare macroeconomic and textual data? • How to process text data into time series data using Natural Language Processing (NLP) tools? • How to estimate time series models? • How to present economic results? Further: Participate actively in discussions with qualified contributions and comment on the content of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Introduction to Natural Language Processing in Macroeconomics (Seminar) *Contents*: Students are given a practical introduction to the use of Python to work on macroeconomic problems. The introduction teaches the use of text data, e.g. for the estimation of macroeconomic models. Examples of text data are newspapers, press releases from central banks or tweets. In the literature, such text data is increasingly analysed and used with Natural Language Processing (NLP) applications. An essential part of the seminar is the writing of a literature review on NLP applications in macroeconomics.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: The students should be able to elaborate on a recent topic independently. The process involves literature research, writing, and the appropriate oral presentation of the written paper.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency:	**Duration:**

irregular	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0110: International Trade, Environment, and Sustainability**	6 C 2 WLH

Learning outcome, core skills: Students develop skills in reading, understanding, and critically evaluating research papers in the field of international economics and environmental economics. They are also expected to have a good understanding of the widely used empirical tools in economics. They will improve their competencies in literature review, scientific writing, and presentation skills.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: International Trade, Environment, and Sustainability (Seminar) *Contents*: The first goal of the seminar is to introduce frontier research topics in international economics and environmental economics. A tentative list of topics includes the impact of international trade on the environment as well as how environmental regulations affect trade patterns. The second goal is to help students develop research skills. This seminar will help students learn how to find good research topics, how to search for relevant literature for a given research topic, how to present papers, and how to write paper summary. To achieve these goals, students will choose a paper from the reading list and present it in the seminar. Moreover, they will write a seminar paper (about 3 pages) that summarizes the chosen paper. The third goal is to present the empirical tools to students. We will focus on discussing empirical papers and students are expected to have a better understanding of several widely used applied econometrics tools during the seminar. Before taking this seminar, students should have taken the prerequisite Econometrics and have a good understanding of the commonly used econometric methods, especially the OLS.	2 WLH
Examination: Presentation (approx. 45 minutes) with a written report (max. 5 pages) **Examination prerequisites:** regular attendance	6 C

Examination requirements: Understand and analyze empirical papers by applying Ordinary Least Squares (OLS) and other standard tools in econometrics and statistics.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Lei Li

Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0111: Economics of Latin America**	6 C 2 WLH

Learning outcome, core skills: This seminar provides a basic understanding and overview of contemporary challenges for sustainable development in Latin American and the Caribbean by exploring recent trends of selected macroeconomic and microeconomic issues. The students analyze the considerable heterogeneity in the economies that compose the region, and will be able to identify key constraints for economic development in comparison to other world regions. The students become familiar with current research on the topic, with data sources for economic analysis, and with development experiences that are relevant for sustainable development strategies within and outside the region. Competencies: • students learn how to identify challenges for sustainable development, • students familiarize with the empirical literature in related field, • students learn to evaluate the empirical findings, • students learn to draw conclusions from the literature, • students develop economic policy conclusions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Economics of Latin America (Seminar) *Contents*: The students work independently on a topic in economics using current literature and prepare a term paper on this topic that meets scientific standards. They present the topic in the seminar to the other participants and engage in a subsequent critical discussion. The topics covered will vary from time to time, always focusing on important issues in sustainable development in Latin America. Possible topics include: • Growth and development strategies • Sustainable macroeconomic management • Poverty and inequality • Access to education • Labor markets, informality, and social outcomes • Corruption, governability, and political stability • Environmental policies • International trade and sustainable global value chains	2 WLH
Examination: Presentation (approx. 20 minutes) with term paper (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Independent scientific analysis of a given topic in written form, presentation within the seminar, and participation in a discussion.	

Admission requirements:	**Recommended previous knowledge:**
B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	B.WIWI-VWL.0114 Macroeconomics B.WIWI-VWL.0002 Macroeconomics II

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	B.WIWI-VWL.0041 Development Economics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs Prof. Inmaculada Martínez-Zarzoso, Ph.D.
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Additional notes and regulations:
The module may not be completed if the module B.WIWI-SDS.0010 Economics of Latin America has already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0112: Economics of Africa**	6 C 2 WLH

Learning outcome, core skills: This seminar provides a basic understanding and overview of contemporary challenges for sustainable development on the African continent by exploring recent trends of selected macroeconomic and microeconomic issues. The students analyze the considerable heterogeneity in the economies that compose the region, and will be able to identify key constraints for economic development in comparison to other world regions. The students become familiar with current research on the topic, with data sources for economic analysis, and with development experiences that are relevant for sustainable development strategies within and outside the region. Competencies: • students learn how to identify challenges for sustainable development, • students familiarize with the empirical literature in related field, • students learn to evaluate the empirical findings, • students learn to draw conclusions from the literature, • students develop economic policy conclusions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Economics of Africa (Seminar) *Contents*: The students work independently on a topic in economics using current literature and prepare a term paper on this topic that meets scientific standards. They present the topic in the seminar to the other participants and engage in a subsequent critical discussion. The topics covered will vary from time to time, always focusing on important issues in sustainable development in Africa. Possible topics include: • Growth and development strategies • Sustainable macroeconomic management • Poverty and inequality • Access to education • Labor markets, informality, and social outcomes • Corruption, governability, and political stability • Environmental policies • International trade and sustainable global value chains	2 WLH
Examination: Presentation (approx. 20 minutes) with term paper (max. 15 pages). **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Independent scientific analysis of a given topic in written form, presentation within the seminar, and participation in a discussion.	

Admission requirements:	**Recommended previous knowledge:**
B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	B.WIWI-VWL.0114 Macroeconomics I B.WIWI-VWL.0002 Macroeconomics II

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	B.WIWI-VWL.0041 Development Economics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 2 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Additional notes and regulations:
The module may not be completed if the module B.WIWI-SDS.0011 Economics of Africa has already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0115: Innovative Data Sources in Economic Research**	6 C 2 WLH

Learning outcome, core skills: This seminar introduces students to the use of innovative data sources in economic research. Students will explore how advances in satellite technology, web data, and text analysis are transforming economic analysis by providing novel, high-frequency, and spatially detailed insights into economic activity. Through engagement with recent empirical research and hands-on applications, students will gain a deeper understanding of how to collect, process, and analyze these emerging data sources using modern computational techniques. After successfully completing the course, students will have acquired the following competencies: Foundational knowledge of innovative data sources and their applications in economic research, including their advantages and limitations compared to traditional data sources. Competencies in data collection and processing, such as web scraping, working with APIs, handling satellite imagery, and using text data for economic analysis. Experience with statistical programming (e.g., Python, R, or Stata) for cleaning, analyzing, and visualizing data from novel sources. Skills in structuring and composing scholarly work, particularly in the development of a research project that leverages an innovative data source. Presentation and communication skills, including the ability to convey empirical concepts in a clear and concise manner in both written and oral form. Capacity for critical reflection, demonstrated through discussions and a term paper assessing the potential and limitations of innovative data sources in addressing key economic questions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Innovative Data Sources in Economic Research (Seminar) *Contents*: Students will engage with innovative data sources by designing and conducting their own data collection project. The seminar will guide students through the process of identifying, accessing, and analyzing non-traditional economic data, such as satellite imagery, web-scraped data, APIs, or text-based sources.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance and an exposé (max. 1 page)	6 C

Examination requirements: Students are expected to demonstrate a solid understanding of innovative data sources and their applications in economic research, competence in data processing and statistical analysis, and the ability to critically assess the strengths and weaknesses of unconventional economic data. • Term Paper (up to 15 pages) [70%] – Students are required to document their data collection process, provide descriptive statistics or summary analysis, discuss challenges and methodological considerations, and critically reflect on the research and policy applications of their chosen data source. The paper should demonstrate	

a clear understanding of the economic relevance, advantages, and limitations of the data. • Presentation (approx. 20 minutes) [30%] – Students will deliver a concise 20-minute presentation of their project, summarizing their data source, collection methods, key findings, and critical reflections. The presentation should effectively communicate complex empirical concepts and engage the audience in discussion.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Carlo Birkholz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0116: Economics of Multinational Enterprises**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand the role of multinational firms in the world economy, • explain why and when multinational firms exist, • understand how the existence of multinational firms changes the market structure and welfare.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economics of Multinational Enterprises (Lecture) *Contents*: Firms in International Trade 1. Concepts, Stylized Facts, Issues 2. Overview of theory and empirical findings 3. Horizontal FDI 4. Vertical FDI Trade Costs and Foreign Direct Investment 5. Internalization	2 WLH
Course: Economics of Multinational Enterprises (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a knowledge of the classical theoretical models that are used to explain the strategies of multinational firms, • narratively state the economic intuitions behind the theoretical models, • show the ability to analyze the differences between multinational firms and national firms.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0001 Microeconomics II
Language: English	**Person responsible for module:** Dr. Zhan Qu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6

Additional notes and regulations: The module may not be taken if the module M.WIWI-VWL.0168 Economics of Multinational Enterprises has already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0117: Introduction to Chinese Economy I**	6 C 2 WLH

Learning outcome, core skills: After successfully completing the module, students will have a comprehensive knowledge of several important research topics on China, such as the US-China trade war, China's population policy, aging, labor market, and several important economic reforms. Besides, students are expected to have a good understanding of the empirical tools. They are expected to be able to apply and integrate the knowledge learned in this course to conduct independent research about the Chinese Economy. Finally, students will improve their competencies in scientific writing and presentation skills.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Introduction to Chinese Economy I (Lecture) *Contents*: As the world's most populous country with a population of over 1.4 billion people and the world's second-largest economy, China has a massive market for goods and services. This course plans to serve as an incubator for building the knowledge on future business needs, driving economic capability and societal development based on academic excellence. It is designed for students interested in international trade, labor economics, development economics, applied econometrics, and the Chinese economy. Our first goal is to provide an introduction to a set of important topics related to the economic development of China so that students have a good understanding of the Chinese Economy and China's impact on the rest of the world. A tentative list of topics includes China's trade liberalization, the US-China trade war, China's population policy and its impact on China's economic development, labor market dynamics (wage, employment, and human capital accumulation), and privatization reforms. The second goal is to present the empirical tools used to test related economic theories in the context of China and to discuss the empirical relevance of related theories. We will emphasize the conceptual issues and basic statistical techniques. Students will also get familiar with several widely used Chinese datasets and learn how to conduct empirical analysis. Our third goal is to introduce frontier research to students. We will draw on some recent academic papers from international trade, labor economics, development economics, and environmental economics, which will allow students to have a good understanding of cutting-edge research and help students outline future research questions.	2 WLH
Examination: Term paper (max. 10 pages, including appendix) **Examination prerequisites:** A short in-class presentation (approx. 10 minutes)	6 C

Examination requirements: • Demonstration of an overall understanding of fundamental topics on Chinese economy, • summarize and compare various theories that explain China's economic development.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Lei Li
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6

Additional notes and regulations:
The module cannot be taken if module B.OAW.MS.002 Introduction to Modern China or B.OAW.MS.002b Introduction to Modern Chinese Society and Economy have already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0118: Introduction to Chinese Economy II**	6 C 2 WLH

Learning outcome, core skills: After successfully completing the module, students will have a comprehensive knowledge of several important research topics on China, such as the China's industrial policy, agglomeration, trade war, real estate market, and several important economic reforms. Besides, students are expected to have a good understanding of the empirical tools. They are expected to be able to apply and integrate the knowledge learned in this course to conduct independent research about the Chinese economy. Finally, students will improve their competencies in scientific writing and presentation skills.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Introduction to Chinese Economy II (Seminar) *Contents*: This course plans to serve as an incubator for building the knowledge on future business needs, driving economic capability and societal development based on academic excellence. It is designed for students interested in international trade, development economics, applied econometrics, and the Chinese economy. Our first goal is to provide an introduction to a set of important topics related to the economic development of China so that students have a good understanding of the Chinese economy and China's industrial policy, industry cluster, trade war. The second goal is to present the empirical tools used to test related economic theories in the context of China and to discuss the empirical relevance of related theories. We will emphasize the conceptual issues and basic statistical techniques. Students will also get familiar with several widely used Chinese datasets and learn how to conduct empirical analysis. Our third goal is to introduce frontier research to students. We will draw on some recent academic papers from international trade, labor economics, finance, development economics, and environmental economics, which will allow students to have a good understanding of cutting-edge research and help students outline future research questions.	2 WLH
Examination: Term paper (max. 10 pages, including appendix) **Examination prerequisites:** Regular attendance and a short in-class presentation (approx. 25 minutes)	6 C

Examination requirements: • Demonstration of an overall understanding of fundamental topics on the Chinese economy, • demonstrate an understanding of key theories of international trade, labor economics, and development economics which are related to the Chinese economy.	

Admission requirements: B.WIWI-ECON.0008 Economics in Action (compulsory for all students in the Mono-Bachelor's	**Recommended previous knowledge:** B.WIWI-VWL.0007 Econometrics

programme in Economics in a version of the examination and study regulations from the winter semester 2026/27 onwards)	
Language: English	**Person responsible for module:** Prof. Dr. Lei Li
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 25	

Additional notes and regulations:
The module cannot be taken if module B.OAW.MS.015 Modern Chinese Economy II or B.OAW.MS.15a Modern Chinese Economy IIa have already been successfully completed.

Georg-August-Universität Göttingen **Module B.WIWI-VWL.0119: Introduction to Stata Using International Trade Data**	6 C 2 WLH

Learning outcome, core skills: At the end of the course, students will be able to: • use Stata's basic data manipulation functionalities, • import, clean, and manage international trade data, • describe and visualize trade patterns across countries, products, and time, • apply basic empirical concepts from international trade, • estimate and interpret simple regression models using trade data.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Introduction to Stata Using International Trade Data (project seminar) *Contents*: **Lecture with integrated computer lab sessions** 1. Introduction to the Stata software environment 2. Overview of international trade data and data sources 3. Data preparation and management of trade data 4. Descriptive and basic empirical analysis of trade data 5. Analysis of selected economic concepts in international trade (e.g., gravity equation comparative advantage, trade agreements)	2 WLH
Examination: Portfolio(completion of 3 short assignments during the semester and final take-home project with follow-up discussion)	6 C

Examination requirements:
Portfolio structure:

1. C ompletion of 3 short assignments during the semester

Students must submit three short assignments during the semester to practise data management, descriptive statistics and basic empirical analysis in Stata.

2. F inal take-home project

Students are required to complete a take-home project, which broadly tests their ability to conduct basic empirical analyses using Stata, with a focus on international trade. The examination assesses both technical skills in data analysis and application of economic concepts in trade, with particular emphasis on the following aspects:

- data management: ability to import, clean, manipulate, restructure, merge, and reshape trade datasets,
- descriptive analysis: ability to create clear graphs and tables to summarize trade patterns across countries and time,
- empirical analysis: ability to conduct basic regression analyses,
- application of trade concepts: ability to apply and interpret key economic concepts in trade in an empirical context.

The project integrates all learned skills in an independent empirical analysis of trade data, including interpretation, visualization, and written reporting.

3. Follow-up discussion Following submission, students are required to meet with the tutor in order to explain the submitted Stata code and analysis in detail.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-QMW.0016 Statistics and Data Science 1: Basics of Applied Statistics, B.WIWI-VWL.0005 International Economic Relations, B.WIWI-VWL.0007 Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module B.WIWI-WB.0003: Introduction to Stata**	3 C 2 WLH

Learning outcome, core skills: At the end of the course, students will be able to: • use Stata's basic data manipulation functionalities, • organize their work in an efficient way, • understand and handle different types of data (cross-section, time series, panel etc.), • create nice-looking tables and graphs, • run regression analyses and interpret regression tables.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Computer lab sessions *Contents*: The course covers the main functionalities of Stata: basic syntax, trouble-shooting, loading and examining data, workflow considerations, combining datasets, regressions, and graphs. Depending on time availability, students may also be introduced to somewhat more advanced topics (e.g. the basics of Stata programming).	2 WLH
Examination: Practical examination **Examination requirements:** Students are required to complete a take-home project which will broadly test their ability to conduct basic empirical analyses with the software, with particular emphasis on the following aspects: • ability to manipulate/restructure/merge/reshape datasets, • ability to create graphs and tables, • ability to conduct regression analyses. After the project submission, students will be required to meet with the tutor in order to explain the submitted software code thoroughly.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introductory Econometrics/Statistics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 20	

Additional notes and regulations:

The course is suitable for advanced BA, who have no or at most limited knowledge of STATA. However, it is strongly recommended that students have acquired a solid knowledge of main ideas in statistics and econometrics.

Georg-August-Universität Göttingen **Module B.WIWI-WIN.0032: Electronic Commerce**	6 C 2 WLH

Learning outcome, core skills: The objective of this course is to familiarize students with the forces driving Electronic Commerce. They understand the impact of technology on the way businesses sell their goods or services through electronic channels. They can assess challenges in business development for such companies and are familiar with appropriate models and theories to address these challenges. The awareness of social and ethical issues attached to technology enables them to make sound strategic decisions in the field of electronic commerce.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Electronic Commerce (Lecture) *Contents*: The course introduces the foundations of Electronic Commerce. Topics covered in this lecture include: • foundations of E-Commerce (E-Commerce infrastructure; Business models for E-Commerce), • relevant issues in E-Commerce (Online consumer behavior; Products and services in E-Commerce; Pricing strategies in E-Commerce; Intelligence and Advertising in E-Commerce), • advanced topics of E-Commerce.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: • Demonstration of in-depth knowledge of the foundations of Electronic Commerce, • Proof of an understanding of relevant issues in Electronic Commerce and ability to apply the knowledge to specific problems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Manuel Trenz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 5
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module B.WIWI-WIN.0036: Security in the Cloud – Practical Applications and Trends**	6 C 2 WLH

Learning outcome, core skills: Students will: • understand basic concepts and principles of IT and cloud security, • evaluate different security architectures for cloud applications, • recognize and evaluate security risks in cloud environments with regard to compliance, data protection and legal aspects, • analyze security risks in cloud environments, • apply techniques and best practices to secure applications, • develop a practical security project with a code artifact, • present technical concepts and solutions effectively as part of a group project.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Security in the Cloud – Practical Applications and Trends (Practical seminar) *Contents*: This practical seminar introduces students to the field of cloud security through a combination of lecture input, hands-on exercises, and a practical group project. Students will gain a comprehensive understanding of cloud security architectures, data protection regulations, identity and access management, secure DevOps, and current trends and challenges. The seminar places particular emphasis on the practical application of security techniques and tools to secure cloud applications. The practical seminar enables students to apply and deepen their theoretical knowledge in a real-life scenario.	2 WLH
Examination: Development of a prototype (artifact (source code of the project)) with presentation (approx. 5 minutes per person) and project report (max. 10 pages per person) in group work (typically 3 students) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: • Successfully and jointly completed exams in a group, typically consisting of 3 students, • source code artifact is evaluated based on metrics for code quality, security, documentation, version control, testing, deployment / scalability and cloud integration, • presentation (5 minutes per person + 5 minutes total questions) and project report of 10 pages per person.	

Admission requirements: none	**Recommended previous knowledge:** Basics of programming and software development
Language: English	**Person responsible for module:** Prof. Dr. Lutz Maria Kolbe Dr. Christopher Henkel

Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module B.ÖSM.225: DNA Technologies for Ecosystem Monitoring**	6 C 5 WLH

Learning outcome, core skills: An ability to understand and define what constitutes a population of a given species is of criticial importance if one is to soundly manage and monitor the future of that species. Measures of genetic diversity, gene flow and coalescent theorey are some of the tools that molecular biology can bring to a modern management strategy for a population of interest, and more broadly, to ecosystems. This course will introduce students to some of these basic population genetic methodologies. Integrative key competencies: teamwork; good scientific practice; safety in the lab, learning lab and bioinformatic protocols.	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: DNA Technologies for Ecosystem Monitoring (Lecture,Practical course) *Contents*: The course includes lectures and a laboratory-based component which will introduce students to molecular techniques such as DNA isolation, PCR, microsatellite amplification and mtDNA haplotype amplification. There will also be a bioinformatic component that will allow students to analyse typical population scale datasets. Students will work in groups of 2-3 on laboratory exercises and present a final lab based report.	5 WLH
Examination: Lab book (max. 15 pages) **Examination prerequisites:** Regular attendance **Examination requirements:** Completed lab book, course participation, evidence of understanding major concepts communicated during the course, completed bioinformatic analyses of your own dataset.	6 C

Examination requirements: Completed lab book, course participation, evidence of understanding major concepts communicated during the course, completed bioinformatic analysis of dataset.	

Admission requirements: none	**Recommended previous knowledge:** A basic understanding of biology
Language: English	**Person responsible for module:** Prof. Dr. Daniel Jackson Dr. Nicolas Cerveau
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Additional notes and regulations:
The course will be held in English, so students should have a basic ability to understand, read and write in English.

Georg-August-Universität Göttingen **Module M.AS.01: Advanced Cultural and Media Studies**	9 C 4 WLH

Learning outcome, core skills: Students • acquire profound knowledge in North American media and cultural studies • are able to approach a text analytically and practically with the systematical-theoretical parameters of the discipline • use diachronic and synchronic approaches to “Advanced American Cultural Studies” and are thus enabled to describe, analyze and assess cultural problems • analyze and interpret non-literary media in North American cultural history from the perspective of cultural and media studies	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Cultural studies seminar "Advanced American Cultural History and Rhetoric" or an equivalent course in another subject (Seminar)	2 WLH
Examination: 2 take home exams (max. 2000 words each) (max. 4000 words) (max. 4000 words)	5 C

Course: Introductory seminar in culture theory or media studies (Seminar)	2 WLH
Examination: Oral Presentation (approx. 30 minutes)	4 C

Examination requirements: Students must be able to analyze and interpret both literary and non-literary texts in an academically complex and elaborate manner; students must be able to develop and present their own ideas for research	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.AS.02: American Literature**	11 C 4 WLH

Learning outcome, core skills: Students • acquire advanced knowledge in North American literary and cultural theory and history • are able to approach a text analytically and critically with the systematical-theoretical parameters of the discipline in order to analyze complex research problems on an advanced theoretical level • develop, expand and validate their own research theses and assumptions based on literary and cultural theory as well as literature and cultural history pertaining to North American Studies • present and discuss their research results on an advanced academic level, both in oral and in written form	**Workload:** Attendance time: 56 h Self-study time: 274 h

Course: Advanced Literature and Cultural Theory Analysis (Seminar)	2 WLH
Examination: Term Paper (max. 7500 words)	6 C

Course: Advanced Literature and Cultural Theory Analysis (Seminar)	2 WLH
Examination: 2 essays (max. 2000 words each) (max. 4000 words) (max. 4000 words)	5 C

Examination requirements: Students are familiar with topic-related literary and cultural theory; they are capable of analyzing and interpreting texts in a context- and theory-based manner and of transferring knowledge; they are able to approach and analyze secondary literature independently and critically; they are capable of phrasing complex research theses as well as discussing them critically	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.AS.03a: Cultural History of American Literature I**	12 C 4 WLH

Learning outcome, core skills: Students • acquire comprehensive knowledge in literary and cultural history by studying the major works of seminal periods in North American literary history • critically describe and compare texts, key concepts and theories of epochs • apply advanced methods of text analysis and interpretation	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: 1st lecture on the cultural history of American literature and, addressing one of four epochs (Lecture)	2 WLH
Examination: Written examination (120 minutes)	6 C

Course: 2nd lecture on the cultural history of American literature, addressing one of four epochs (Lecture) If a student registers for module M.AS.03b, it is mandatory that the epochs in module M.AS.03a and module M.AS.03b are not the same.	2 WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: Comprehensive knowledge about one epoch in North American cultural history of literature; critical reflection of the aesthetic developments, the major works, and the cultural contexts of the epoch in question	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester; one of the epochs is offerd each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.AS.03b: Cultural History of American Literature II**	6 C 2 WLH

Learning outcome, core skills: Students • acquire comprehensive knowledge in literary and cultural history by studying the major works of seminal periods in North American literary history • critically describe and compare texts, key concepts and theories of epochs • apply advanced methods of text analysis and interpretation	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: lecture on the cultural history of American literature (Lecture) If a student has already completed module M.AS.03a, it is mandatory that the epochs in module M.AS.03a and module M.AS.03b are not the same.	2 WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: Students must be able to critically engage with texts and key concepts of the epoch in question; comprehensive knowledge about on epoch in North American cultural history of literature; critical reflection of the aesthetical developments, the major works, and the cultural contexts of the epoch in question.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: jedes Semester (4-semestriger Zyklus: jedes Semester wird eine von vier Epochen angeboten)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.AS.04: North American Studies (Degree Course)**	6 C 4 WLH

Learning outcome, core skills: Students • acquire comprehensive and profound detailed literary and cultural knowledge in the field of North American Studies • can critically engage with diachronic and synchronic parameters of the discipline; students can employ and assess the tools, discourses, and parameters of North American literary and cultural studies; the can critically reflect on research problems • independently engage with, reflect on as well as apply interdisciplinary methods and questions of research	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced seminar in North American Studies (Seminar)	2 WLH
Course: Colloquium in North American Studies	2 WLH
Examination: Oral examination (approx. 25 minutes)	6 C

Examination requirements: Subject-specific and advanced knowledge of theories, methods and the literary and cultural history of North American Studies; the ability to present research concepts concerning individual authors, texts and key concepts and projects, critically approach and assess authors, texts, and key concepts of an epoch or a field in media/cultural theory.	

Admission requirements: M.AS.01, M.AS.02	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Agr.0020: Genome Analysis and Application of Markers in Plantbreeding**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Studierende erlernen ihre Kenntnisse in klassischer Genetik auf Problemlösungen in züchterischen Situationen anzuwenden. Studierende erlernen selbständig sich Kenntnisse im Umgang mit großen Datensätzen anzueignen und sich in entsprechende Software einzuarbeiten.	Attendance time: 56 h Self-study time: 124 h

Course: Genome analysis and application of markers in plantbreeding (Lecture,Exercise) *Contents*: Überblick über verschiedene Typen von molekularen Markern. Schätzung von genetischen Distanzen. Grundlagen der klassischen Genetik zur Kopplungsanalyse. Konstruktion von Kopplungskarten. Markergestützte Rückkreuzung. Kartierung von QTL: Theorie und praktische Übungen mit großen Datensätzen aus früheren Experimenten. Grundlagen der Bioinformatik: Vergleich von DNA Sequenzen.	4 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Abgabe der Lösung von Übungsaufgaben **Examination requirements:** Grundlagenkenntnisse in klassischen und molekularen Methoden der Kartierung von Genen. Basiskenntnisse im Einsatz molekularer Marker in der Pflanzenzüchtung.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** apl. Prof. Dr. Wolfgang Link PD Dr. Wolfgang Ecke
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Agr.0056: Plant Breeding Methodology and Genetic Resources**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Students learn the integration of classical and molecular approaches to solve present problems in plant breeding. Social aspects have to be considered. Students learn, in own presentations, to draw critical conclusions from recent research papers and to communicate these to other students.	Attendance time: 56 h Self-study time: 124 h

Course: Plant breeding methodology and genetic resources (Lecture) *Contents*: Principles of breeding methodology: Response to selection, breeding methods for clonal, line, hybrid and population cultivars. Marker assisted selection for monogenic and polygenic traits. Use of plant genetic resources: wild species, ex-situ and in-situ conservation, on-farm management. Breeding for marginal environments, demonstrated with examples from temperate and tropical regions.	4 WLH
Examination: Written exam (90 minutes, 80%) and presentation (approx. 20 minutes, 20%) **Examination requirements:** Population Genetics, Application of Markers in Plant Breeding, Concepts of using genetic resources in plant breeding. Good knowledge on: ‘Pre-Breeding’, categories and methods in Plant Breeding.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge (B.Sc. level) in genetics and plant breeding
Language: German, English	**Person responsible for module:** apl. Prof. Dr. Wolfgang Link
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations:
Literature:

Lecture based material.

Georg-August-Universität Göttingen **Module M.Agr.0058: Plant-Herbivore Interactions**	6 C 4 WLH

Learning outcome, core skills: Knowledge of complex interactions between plants and herbivorous insects. Preparation and critical reflection of methods applied in current research findings covering the lecture topics by a seminar presentation.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Plant herbivore interactions (Lecture,Seminar) *Contents*: The module deals with the interactions between plants and herbivorous insects. The diversity of the organisms involved and the biocenoses are discussed. With regard to plants different adaptations to damage by insects are presented and the role of resistance mechanisms is outlined. The sensory organs of herbivorous insects to discriminate between different plant species and the role of volatile and secondary compounds produced by the plants are demonstrated. Multiple Interactions between plants, their herbivores, and natural enemies and application strategies in plant protection are discussed. The interactions between flowering plants and pollinators are outlined and the importance of seed predation will be exemplified. During the seminar part of the module students will present recent research findings which will complement the content of the lectures.	4 WLH
Examination: Written exam (67%, 45 minutes) and presentation (33%, approx. 20 minutes) **Examination prerequisites:** regular attendance at seminar and preparation of a seminar talk and a handout **Examination requirements:** Profound knowledge of processes involved in plant selection by herbivorous insects; protection strategies evolved by plants; determinants of herbivorous communities on specific plants, multitrophic interactions between plants; herbivorous insects and their natural enemies; interactions between plants and their pollinators or seed predators.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Michael Georg Rostás
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Agr.0086: World Agriculture Markets and Trade**	6 C 6 WLH

Learning outcome, core skills: Theoretical foundations of international trade: Ricardo, Heckscher-Ohlin-Viner; Empirical tests for different trade theories; imperfect competition in international trade; gravity theory; institutions and organisations on world agricultural markets; agricultural trade liberalisation at the multilateral (WTO) and bilateral level; specific policy measures in agricultural trade.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: World agricultural markets and trade (Lecture,Exercise) *Contents*: This module deals with the situation in the world agricultural markets and with the intervention of agricultural and trade policy in these markets based on an introduction into basics of the international trade theory. The students are able to discern populistic arguments against free-trade. They can estimate if there are reasons to deviate from the from the postulate of free-trade in matters of agricultural products, e.g. in order to reward the positive external effects of the agriculture, to ensure the food supply, to fend off dumping or to correct distorted world prices for agricultural products.	6 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Handelstheoretische Grundlagen: Ricardo, Heckscher-Ohlin-Vanek, Viner; Empirische Tests von Handelstheorien; unvollkommener Wettbewerb auf internationalen Märkten; Grundlagen von Gravitätsgleichungen; Institutionen und Organisationen auf Weltagrarmärkten; Agrarhandelsliberalisierung auf multilateraler (WTO) und bilateraler Ebene; spezielle Politikmaßnahmen im internationalen Agrarhandel	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of agricultural economics
Language: English, German	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each summer semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 90	

Additional notes and regulations:

Literature:

Feenstra, R.C. 2004: Advanced international trade: Theory and evidence. Princeton University Press

Georg-August-Universität Göttingen **Module M.Agr.0094: Basics of Molecular Biology in Crop Protection**	6 C 4 WLH

Learning outcome, core skills: Comprehension about important scientific plant pathogen detection methods like ELISA and PCR used in agriculture, knowledge about biochemical and molecular basics in plant breeding and genetic resistance against plant pathogens.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Basics of molecular biology in crop protection (Lecture) *Contents*: In agricultural research and diagnostics there is an increasing use of biochemical and molecular methods and techniques. The lecture conveys the scientific basics that are required for the understanding of these methods and prepares students for further practical courses and lectures. Specific contents are: cytology, cell-wall composition of different organisms, structure and function of different macromolecules (proteins, DNA, carbohydrates), function and regulation of enzymes, DNA-replication, transcription and translation, mechanisms of regulation, intruduction into principles of molecular detection methods, lipids and membranes, phytohormones and selected secondary metabolites.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Composition of macromolecules, output materials, typical molecular binding types, function, regulatory mechanisms on protein and nucleic acid level, phytohormones, secondary metabolism.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Anke Sirrenberg
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Agr.0106: China Economic Development: From an Agricultural Economy to an Emerging Economy**	6 C 4 WLH

Learning outcome, core skills: The students learn more about the specificities of China's economic transformation as well as the underlying economic concepts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: China Economic Development: From an agricultural economy to an emerging economy (Lecture,Seminar) *Contents*: The lecture is designed for master students enrolled at the University of Göttingen. The course covers experiences and lessons to be drawn from China's economic transformation, by explaining the root causes for a shift from an agriculturally dominated to an emerging economy.	4 WLH
Examination: Presentation (about 25 minutes, 50%) and homework (max 15 pages, 50%) **Examination requirements:** Presentation and critical discussion of a scientific aspect of China's economic transformation.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Xiaohua Yu
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.Agr.0120: Molecular Diagnostic and Biotechnology in Crop Protection**	6 C 4 WLH

Learning outcome, core skills: Participants will be able to understand nucleic acid based as well as immunologic diagnostic tools for detection of plant pathogens and pests. More the ability to select appropriate diagnostic techniques and make informed decisions regarding their development and application is one of the core skills. Students shall understand the role of biotechnology in plant protection and resistance breeding to be able to assess the potentials and risks of GM crops and other GMOs in plant protection.	**Workload:** Attendance time: 65 h Self-study time: 115 h

Course: Molecular Diagnostic and Biotechnology in Crop Protection (Lecture) *Contents*: Principles and applications of diagnostic techniques in plant protection with a focus on nucleic acid analysis (characteristics as accuracy, detection level, multiplexing, quantification, portability, and designability). Nucleic acid detection: RT-PCR viruses, group specific primers, multiplex dsRNA-diagnosis (viruses), qPCR (SYBR, TaqMan, fluorophores), Nested-PCR, RFLP, MLSA, ddPCR (phytoplasma), Barcoding (fungi, insects, weeds) SNP-genotyping (KASP, etc.), RCA (DNA viruses, Padlock-probes), Hybridisation (dot-blot viruses, RNAscope, SABER-FISH), DNA-arrays (microarrays), HTS/NGS/ Transcriptomics (Virome/metagenomics analysis, discovery of new virus diseases), Sequencing platforms (Roche 454, Illumina, Solid and Ion Torrent, SMRT and MinION nanopore sequencing), Isothermal amplification techniques (LAMP, RPA, HAD, NASBA), CRISPR based diagnosis (viruses) Molecular detection of specific traits (fungicide, herbicide, insecticide resistance). Protein detection: ELISA, TPIA, LFA, Immune fluorescence, ISEM electron microscopy, confocal microscopy and fluorescent labelled viruses, Immuno(capture)-PCR, Luminex. Biotechnology in plant protection: Crop trait targets, techniques to increase genetic diversity, cisgenesis, NGS and third generation sequencing, omics, genetically modified organisms (GMOs) in engineering resistance to viruses, pests, herbicides, bacterial and fungal pathogens, genome editing tools, applications of RNA interference and epigenome modifications, RNAi machinery, cross-kingdom RNAi, VIGS, HIGS, SIGS, Epigenetics, regulation and public acceptance, risk assessment	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Understanding concepts and technical principles of molecular diagnostic methods and the application of molecular markers and plant biotechnology in plant protection. Demonstration of the ability to read primary literature that describes applications of techniques covered by the module	6 C

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Prof. Dr. Mark Varrelmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Agr.0174: Plant Health Management in Tropical Crops**	6 C 4 WLH

Learning outcome, core skills: Students are able to recognize pests and diseases of tropical crops as treated in this course. They critically evaluate scientific and non-scientific publications on crop protection in the tropics. Students are able to create a scientific presentation according to the standards of international conferences and use interactive teaching material; students know the scope and limits of their knowledge in the treated field, they know where to find relevant, reliable information. Students learn to consider subject-related issues from a variety of different perspectives and to work effectively in international teams.	**Workload:** Attendance time: 36 h Self-study time: 144 h

Course: Plant Health Management in Tropical Crops (Lecture,Excursion,Seminar) *Contents*: Blended learning module; presentation of the most important pests and diseases of the most important tropical crop plants: symptoms, life cycles and plant health management (eg. in rice, maize, cacao, coffee, bananas). Additional crops may be included according to students´ preferences and practical experience. Introduction to relevant international data banks and networks. Use of scientific videos on selected topics of crop protection in the tropics.	4 WLH
Examination: Written exam (45 min, 40%), Student presentation with discussion (ca. 20 min presentation + ca. 10 min discussion 60%) **Examination requirements:** • Written exam: main groups of causal agents, basic botany of the crop plants treated, basic biology of causal agents (life cycles etc.), recognition of symptoms, knowledge of control strategies. • Presentation: appropriate according to the standard of international conferences: relevant and sound content, clear structure, style, language (written and spoken) and pronunciation, citation and use of sources according to good scientific practice. • You must successfully complete and pass both partial examinations.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basics of plant pathology, including basics of integrated pest management
Language: English	**Person responsible for module:** Prof. Dr. Michael Georg Rostás
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 30	

Additional notes and regulations:
The module is designed as a blended learning-course with strong emphasis on digital material and student based learning. Contact time is reduced to allow thorough preparation of the presentations.

Georg-August-Universität Göttingen **Module M.Agr.0180: Mineral Nutrition of Crops Under Different Climate and Environmental Conditions**	6 C 4 WLH

Learning outcome, core skills: Students acquire knowledge of characteristic properties and specialities of nutrient cycles of ecosystems of different climate zones and upon different environmental drivers. Participants develop understanding of important processes and interactions between abiotic condition of locations, processes in soils and in particular on their effects on plant nutrient uptake. They know plant adaptation mechanisms. Students also get knowledge of the use of stable isotopes for the study of the above processes.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Mineral nutrition of crops under different climate and environmental conditions (Lecture) *Contents*: Lectures focus on element dynamics in ecosystems starting with element inputs, their internal turnover processes and dynamics and outputs. In the course of the semester they will cover sub-arctic over temperate to tropical zones and key examples. In each zone a key focus will be on adaptation mechanisms that can be found among wild plants and crops. About one third of the module will address stable isotope methods for studying such subjects.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of key characters of nutrient cycles in different climate zones with respect to major problems of soil fertility, plant nutrient supply and other environmental impacts, including anthropogenic management. Second important focus on adaptation mechanisms in plants to cope with nutritional constraints. Basic knowledge in stable isotope tracer methods and natural stable isotope abundance methods for the study of above research subjects.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basics in plant physiology, chemistry and soil science
Language: English	**Person responsible for module:** Prof. Dr. Klaus Dittert
Course frequency: each winter semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 36	

Additional notes and regulations: After successful conclusion of M.Agr.0103 students can not complete M.Agr.0180

Georg-August-Universität Göttingen **Module M.Agr.0195: Resourcing in Entrepreneurship**	6 C 2 WLH

Learning outcome, core skills: The goal of this seminar is to get an overview of diverse theoretical perspectives on resourcing in entrepreneurship based on scientific research papers. Students gain an analytical understanding of typical challenges entrepreneurs face throughout the founding process, focusing on resource acquisition. The strong research focus does not only enable students to identify, understand and see through common challenges, conflicts, and troubles throughout the entrepreneurship process and within entrepreneurial ecosystems, but also to discuss, evaluate, and question research findings and scientific debates.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Resourcing in Entrepreneurship (Seminar) *Contents*: No doubt, Silicon Valley is one of the world's leading hubs for technological innovation. Pioneering companies like Google, Facebook or PayPal were founded by visionary entrepreneurs with growth ambition. Yet, despite the myth of a solitary genius tinkering in her garage, such entrepreneurial activities and innovations are only possible if diverse actors work together in manifold ways. Here, a major challenge becomes apparent: Although such entrepreneurial activities require manifold, comprehensive resources to work on innovative ideas, develop new products and grow an organization, in most cases, entrepreneurs do not have such necessary resources. In this course, we address this challenge from two perspectives. First, we focus on the role of networks during the entrepreneurship process since new ventures highly rely on resources from external actors. What kind of relationships do new ventures form? How do entrepreneurs form such network ties to acquire funding or first customers? How do their networks evolve throughout the founding process? Second, we focus on one relevant type of environment, providing resources for the founding process: entrepreneurial ecosystems. Not only entrepreneurs cluster in regions like Silicon Valley, London or Paris, but also investors, research universities, skilled work forces, mentors, and co-working spaces, creating a dynamic setting for technological innovation and high growth entrepreneurship. How do entrepreneurial ecosystems in different regions look like? How do they promote entrepreneurial activities?	2 WLH

Examination: thesis/anti-thesis presentation (approx. 5 min.), two mini-take-home exams (2 pages each), two reviews of mini-take-home exams **Examination requirements:** Students have to show that they are able to apply the theoretical concepts discussed in the seminar, reflect them	

critically, and develop practical implications rooted in a strong theoretical foundation. Students have to read and critically discuss scientific papers.	

Admission requirements: none	**Recommended previous knowledge:** experience with discussing scientific papers or willingness to learn it
Language: English	**Person responsible for module:** Prof. Dr. Katharina Scheidgen
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Agr.0197: Sustainability – Basics and Application**	6 C

Learning outcome, core skills: In this course, students will learn about the fundamental concepts and ideas that underpin sustainability on a global level. It aims at creating a deeper understanding of the fair use of resources and its challenges on local and global scale. Sustainable development is not only a difficult practical challenge but also a conceptual, political and moral problem. How can an understanding of the complexities help to shape approaches to solutions? Students will acquire discursive and reflective competencies. Students will work with local stakeholders and acquire practical insights for implementing sustainability in real-life applications.	**Workload:** Attendance time: 66 h Self-study time: 114 h

Course: Sustainability – basics and application (Internship,Lecture,Seminar,) **Course: *Part 1 Sustainability basics*** (Lectures and self-study) The first module part introduces students to sustainability concepts (environmental, social and economic), and sustainable development (SDGs). Building on these foundations, the main part of the module is practical. ***Part 2 Sustainability application*** (seminar, practical work and self-study) Students can choose one topic and work on a sustainability-related task in either interdisciplinary teams or local companies, NGOs and university projects. What is a particular sustainability challenge? What measures can help to realize sustainability goals and what trade-offs hinder the success of implementation. A seminar will be organized to present, discuss and reflect the practical work.	
Examination: oral presentation in the seminar (ca. 10min, 30%) and written report for practical part 2 (max. 10 pages, 70%) **Examination prerequisites:** Seminar attendance	6 C

Admission requirements: open for all faculties	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Simone Pfeiffer (CBL, Centre of Biodiversity and Sustainable Land Use) Dr. Michaela Dölle (Faculty of Forest Sciences and Forest Ecology)
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Georg-August-Universität Göttingen **Module M.Agr.0209: Greenhouse gas emissions and mitigation in grassland-based livestock systems**	3 C 2 WLH

Learning outcome, core skills: By taking this course, you will: • understand the basics of greenhouse gases (GHG) emissions and climate change in the global agricultural landscape • become familiar with key international climate conventions and agreements, as well as their backgrounds • know the different emission sources and understand how different livestock management practices influence emissions in grassland-based systems • get acquainted with the methodological approaches used for collecting data for indirect GHG emission estimates for grassland-based livestock systems • perform hands-on calculations of GHG emissions based on case studies • become familiar with policies and measures for decreasing emissions	**Workload:** Attendance time: 30 h Self-study time: 60 h

Course: Greenhouse gas emissions and mitigation in grassland-based livestock systems (Lecture,Seminar) *Contents*: Reducing GHG emissions is paramount to combat climate change globally. Grassland-based livestock systems contribute to climate change but are also affected by it, which means that livestock in these systems can be part of the solution. This sub-module is designed to provide participants with an introduction to the topic of GHG emissions from livestock in grassland-based systems. Key international climate conventions (e.g., the Paris Agreement) and other international commitments envisaged to combat climate change will be discussed. We will explore both qualitative and quantitative aspects needed for understanding, quantifying and mitigating GHG emissions from grassland-based livestock systems. The sub-module will also present different policies and measures (e.g., carbon credits and tax incentives) that can be considered to support a decrease in GHG emissions from livestock in grassland-based systems. The lectures for each sub-module are given by researchers from FB11 at Uni Kassel and invited speakers. In the seminar part, students give a presentation on a topic from this course. Guest lecturers from international research institutions and the private sector will be invited for both sub-modules. Lecture slides will be provided for each lecture alongside further literature for self-study.	2 WLH
Examination: Presentation (20 mins per group, 60%), written exam (45 minutes, 40%) **Examination prerequisites:** Regular attendance of lectures and exercises, as well as presentation of a seminar talk	3 C

Admission requirements:	**Recommended previous knowledge:**
none	Basic knowledge (B.Sc. level) of soil, plant and

	animal sciences
Language: English	**Person responsible for module:** Dr. Christian Bateki
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Additional notes and regulations:

Additional notes and regulations:

This 3-credits module is offered as a complement to the 3-credits Module “Livestock and Biodiversity in agricultural Landscapes” (Prof. Isselstein, Univ. Göttingen) that takes place in the winter semester, or, alternatively, as a complement to the 3-credits Module “Feed quality, animal performance and product quality in grassland-based livestock systems” (Prof. Klevenhusen, Univ. Kassel-Witzenhausen)

Georg-August-Universität Göttingen **Module M.Agr.0213: Data Analysis in the Soil-Plant-Environment using R**	3 C 2 WLH

Learning outcome, core skills: The students will be able to know the basic functionality of the statistical package R and how to perform the analysis of data sets that are typical in soil and plant sciences. An additional core skill is the identification, usage and evaluation of online resources (e.g. packages and data sets).	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Data Analysis in the Soil-Plant-Environment using R (Block course,Exercise) *Contents*: The fundamental concepts of the programming package R will be presented and deepened during practical exercises. Introduction and basic functionalities, data management, data visualization, coding styles, functions and writing scripts will be addressed. Special emphasis is put on visualization methods. Prediction and simulation of water flow in soil and plants will be addressed. Furthermore, time series and datasets related to soil and plant with selected R packages will be considered.	2 WLH
Examination: Report (max. 10 Pages, including data plots using R) **Examination requirements:** Students prove that they are capable of • finding relevant data, manage and manipulate datasets • interpreting data and results through the use of graphical tools. The produced code has to be handed in along with the report and will also be subject to the evaluation.	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of soil and plant processes
Language: English	**Person responsible for module:** Dr. Faisal Hayat
Course frequency: each winter semester1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Agr.0221: Causal Machine Learning in Agricultural and Food Economics**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Machine learning is changing the world in different dimensions, and agricultural and food economics is no exception. It provides more powerful computation and nonlinearity in addition to putting more emphasis on prediction and pattern recognition. This course will teach students to apply machine learning techniques in causal analysis for agricultural and food economics which can be used for impact analyses.	Attendance time: 40 h Self-study time: 140 h

Course: Causal Machine Learning in Agricultural and Food Economics (Internship,Lecture,Exercise,Seminar) *Contents*: This course will teach students to apply machine learning algorithms to causal analysis for the research of agribusiness and food economics. Combining lectures, practices, and excises, we will introduce Python language, and how to use Python to realize plotting and evaluate impacts with machine learning. The models to be studied include Double Machine Learning, Causal Forest, PSM+Xgboost, Meta Learner, IV lasso, and Deep IV.	4 WLH
Examination: Written examination (120 minutes, 70%), participation and homework assignments (max. 12 Pages, 30%) **Examination requirements:** Examination requirements: 1. Understand the causal machine learning models taught in the class 2. Use python skillfully to practice related models with real data for impact analysis in food economics and agribusiness.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Xiaohua Yu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.Agr.0223: Soils as sinks and sources of greenhouse gases**	3 C 2 WLH

Learning outcome, core skills: The students will learn the theoretical background of different methods to measure soil-atmosphere fluxes of greenhouse gases and typically used experimental designs and get a practical training in measuring and claculating soil gas fluxes	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Soils as sinks and sources of greenhouse gases (Block course) *Contents*: Soils are significant sources and sinks of greenhouse gases (GHG) in a global but also local context. Land use has a direct impact on these sources and sink functions. This course focuses on soil processes and their relevance for GHG fluxes. In addition to lectures, field-trips and hands on practical measurements and data exercises will provide a good insight into current scientific methods in this field. The module takes place as a one-week block during the semester break. The theoretical basics and background will be presented in the form of presentations and examples which typically covers half of the day. The other half is dedicated to a field trip to ongoing experiments, hand-on training on gas flux measurement of different approaches and laboratory visit, and data analysisi training. Students interested in doing a project study as a follow -up of this course are welcome develop an experimental design during the course. Please contact . M.Freudiger for this prior to the course.	2 WLH
Examination: Short Report (4 pages, 50%) and oral exam (approx. 10 minutes, 50%) **Examination requirements:** The short report will be made of the documentation of an exampallary set of measurements conducted during the course practicals.In the oral exam student show that they understood the basics of the processes involved in the GHG turnover and principles of GHG measurements and typical designs used in studies.	3 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of soil and plant processes
Language: English	**Person responsible for module:** Prof. Dr. Martin Freudiger
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Ara.10: Islamic Culture, Past and Present**	8 C 2 WLH

Learning outcome, core skills: Participation in the module enables students to analyze topics from the realm of Islamic Culture independently and in detail. To this aim, they will learn to conduct research on, understand and interpret a given set of Arabic primary sources. They will be introduced to methods of historical, legal, critical and/or philological analysis, which they are to apply to a given set of research questions. The scope of the module encompassed Arabic texts from all historical periods of Islamic culture and all geographic regions of the Islamicate world. These texts will be studied in the context of current scholarly discussions and previous research results. The course will be taught in English.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Islamic Culture in Past and Present (Seminar)	2 WLH
Examination: Term Paper (max. 20 pages)	5 C

Course: Independent Studies (source work)	
Examination: Oral Presentation (approx. 20 minutes)	3 C

Examination requirements: Individual work and knowledge on a given topic from the fields of Islamic culture, based on Arabic sources and secondary literature.	

Admission requirements: 20 C Arabic or equivalent Arabic language proficiency	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Riem Spielhaus
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
The module can be credited in the area of key competences, especially by students of the Master programmes "Arabic Studies/Islamic Studies" and "Iranian and Persianate Studies".

Georg-August-Universität Göttingen **Module M.Ara.501: Advanced Reading and Discussion**	6 C 4 WLH

Learning outcome, core skills: In this module, students enhance their reading, comprehension, listening and speaking language skills. The course content is focused on reading different kinds of texts, of written expression, listening comprehension and especially active language practice in the form of discussions and presentations. The students are able to communicate orally and in writing. They are capable of analyzing the usage of Modern Standard Arabic and can actively use the language. The course will be taught in Arabic.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Reading Arabic texts	2 WLH
Course: Arabic conversation	2 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Students should be able to understand complex Arabic texts, reproduce Arabic documents in their own words, and write Arabic texts independently.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: Arabisch	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: each winter semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.502: Master Colloquium**	4 C 1 WLH

Learning outcome, core skills: Students present and discuss the topic of their Master thesis. Here, both the advice of the instructor and the feedback from the other participants enable them to plan their academic project adequately in term of form, method and content. Special consideration is given to the challenge of demonstrating foreign language proficiency as well as presenting their subject of inquiry at the current state of research in the Master thesis.	**Workload:** Attendance time: 14 h Self-study time: 106 h

Course: Colloquium	1 WLH
Examination: Oral Presentation (approx. 30 minutes), not graded **Examination prerequisites:** regular participation **Examination requirements:** Preparation, presentation and discussion of a concept for the final thesis.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.507: Arabic Literature**	6 C 2 WLH

Learning outcome, core skills: In this module, students are taught how to analyze texts from the diverse Arabic literatures independently, consulting and utilizing sources for this purpose. They are introduced to Arabic poetry and prose of the past and the present. Text sources from different fields and genres of Arabic literature are studied, discussed and placed in the context of current scholarly debates.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Advanced knowledge of a subject concerning poetry and prose acquired independently by the study of Arabic sources and the secondary literature.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.508: Arabic Literature - Advanced Studies**	8 C 2 WLH

Learning outcome, core skills: In this module, students are taught how to analyze texts from the diverse Arabic literatures independently, consulting and utilizing sources for this purpose. They are introduced to Arabic poetry and prose of the past and the present. Text sources from different fields and genres of Arabic literature are studied, discussed and placed in the context of current scholarly debate. By writing a term paper, the students learn how to formulate an academic question pertaining to the given subject area and to deal with it on their own using sources and specialist literature.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral presentation (approx. 20 minutes) and term paper (max. 20 pages) **Examination requirements:** Advanced knowledge of a subject concerning poetry and prose acquired independently by the study of Arabic sources and the secondary literature.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.509: Advanced Arabic Reading and Writing**	6 C 2 WLH

Learning outcome, core skills: On successful completion of this module, students are able to understand complex Arabic texts, analyze them grammatically and translate them. They also have a good command of written Arabic (e.g. in translating texts from English into Arabic, reproducing or formulating their own texts in writing).	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language exercise	2 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** regular participation	6 C

Examination requirements: The ability to understand and translate complex Arabic texts, enhanced knowledge of Arabic grammar, active use of the written language.	

Admission requirements: M.Ara.501	**Recommended previous knowledge:** none
Language: Arabisch, English	**Person responsible for module:** Prof. Dr. Jens Scheiner
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.510: Islamic Culture, Past and Present**	8 C 2 WLH

Learning outcome, core skills: Participation in the module enables students to analyze topics from the realm of Islamic Culture independently and in detail. To this aim, they will learn to conduct research on, understand and interpret a given set of Arabic primary sources. They will be introduced to methods of historical, legal, critical and/or philological analysis, which they are to apply to a given set of research questions. The scope of the module encompassed Arabic texts from all historical periods of Islamic culture and all geographic regions of the Islamicate world. These texts will be studied in the context of current scholarly discussions and previous research results. The course will be taught in English.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Islamic Culture in Past and Present (Seminar)	2 WLH
Examination: Term Paper (max. 20 pages)	5 C

Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes)	3 C

Examination requirements: Individual work and knowledge on a given topic from the fields of Islamic culture, based on Arabic sources and secondary literature.	

Admission requirements: 20 C Arabic or equivalent Arabic language proficiency	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jens Scheiner
Course frequency: Infrequently	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
The module can be credited in the area of key competences, especially by students of the Master programmes "Arabic Studies/Islamic Studies" and "Iranian and Persianate Studies".

Georg-August-Universität Göttingen **Module M.Ara.605: Methods and Theories in Arabic-Islamic Studies**	6 C 2 WLH

Learning outcome, core skills: Students deepen their knowledge of methods and theories used in the current discourses of Arabic and Islamic studies. These research approaches and tools are explored with regard to Arabic primary sources, modern research studies, audiovisual evidence as well as information available on the internet, and will be analyzed in the context of the Middle East. Students will thus be able to reflect critically on the intellectual trajectories and historical dimensions of current political, religious, and social discourses in Islamicate societies and productively apply this knowledge to current Islam-related debates.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Students will be able to engage in methodological and theoretical discussions based on the analysis of textual and audiovisual evidence.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.606: Hadith Studies**	6 C 2 WLH

Learning outcome, core skills: Students are familiarized with Hadith studies and learn how to apply the *isnad-cum-matn* analysis. This innovative analytical tool in Islamic Studies combines the investigation of the transmission (*isnads*) and the content (*matns*) of prophetic traditions. Students are introduced to the theoretical foundations, research history and most important Arabic Hadith compendia. Various sources from the field of Hadith and bio-biographical dictionaries are studied and placed in the context of current scholarly debates. Students will thus be able to critically reflect the intellectual trajectories and historical dimensions of political, religious, and social discourses in Islamicate societies and productively apply this knowledge to current Islam-related debates.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Advanced knowledge of a subject related to Hadith studies and isnad-cum-matn analysis acquired independently by the study of Arabic primary sources and the secondary literature.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jens Scheiner
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.607: Ethics and Education in Islam**	6 C 2 WLH

Learning outcome, core skills: Students learn to analyze issues relating to ethics and education in Islam while utilizing an array of Arabic primary sources and modern research studies. They are made familiar with the theoretical framework of research on moral concepts, the perception of knowledge (in its interaction with faith) and learning in Islam, and connect respective thematic questions to philological-historical analysis. Textual sources from different areas of Islam's intellectual history (esp. 7th-15th century) are studied in detail and examined in due consideration of current scholarly debates. Students will thus be able to critically reflect the intellectual trajectories and historical dimensions of political, religious, and social discourses in Islamicate societies and productively apply this knowledge to current Islam-related debates.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Advanced knowledge of a subject relating to ethics and education in Islam, based on independent study of Arabic primary sources and the secondary literature.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.608: Secular Modernity and Islam**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students learn how to analyze a subject related to secular modernity in the Arab world independently while consulting and utilizing respective sources for this purpose. They are introduced to the theoretical foundations of research on secular modernity and Islam and combine questions relating to secular modernity with philological analysis. Text sources from different fields of the Arabic intellectual history (from the late 19th century to the present) are studied, discussed and placed in the context of current scholarly debates. The students thus deepen their intercultural competences and acquire a profound understanding of contemporary religious, political and cultural discourses in Islamicate societies, which enables them to critically analyze media discourses on Islam and take an informed approach to respective public debates.	Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Advanced knowledge of a subject related to secular modernity in the Arab world acquired independently by the study of Arabic primary sources and the secondary literature.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.610: Hadith - Advanced Studies**	8 C 2 WLH

Learning outcome, core skills: Students are familiarized with Hadith studies and learn how to apply the *isnad-cum-matn* analysis. This innovative analytical tool in Islamic Studies combines the investigation of the transmission (*isnads*) and the content (*matns*) of prophetic traditions. Students are introduced to the theoretical foundations, research history and most important Arabic Hadith compendia. Various sources from the field of Hadith and bio-biographical dictionaries are studied and placed in the context of current scholarly debates. Students will thus be able to critically reflect the intellectual trajectories and historical dimensions of political, religious, and social discourses in Islamicate societies and productively apply this knowledge to current Islam-related debates. Students write a term paper, by which they demonstrate the ability to deal academically with questions pertaining to the given subject areas, based on their knowledge of Arabic primary sources and the specialist secondary literature.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral presentation (approx. 20 minutes) and term paper (max. 20 pages) **Examination requirements:** Advanced knowledge of a subject related to Hadith studies and isnad-cum-matn analysis acquired independently by the study of Arabic primary sources and the secondary literature.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jens Scheiner
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.611: Ethics and Education in Islam - Advanced Studies**	8 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students learn to analyze issues relating to ethics and education in Islam while utilizing an array of Arabic primary sources and modern research studies. They are made familiar with the theoretical framework of research on moral concepts, the perception of knowledge (in its interaction with faith) and learning in Islam, and connect respective thematic questions to philological-historical analysis. Textual sources from different areas of Islam's intellectual history (esp. 7th-15thcentury) are studied in detail and examined in due consideration of current scholarly debates. Students will thus be able to critically reflect the intellectual trajectories and historical dimensions of political, religious, and social discourses in Islamicate societies and productively apply this knowledge to current Islam-related debates. Students write a term paper, by which they demonstrate the ability to deal academically with questions pertaining to the given subject areas, based on their knowledge of Arabic primary sources and the specialist secondary literature.	Attendance time: 28 h Self-study time: 212 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral presentation (approx. 20 minutes) and term paper (max. 20 pages) **Examination requirements:** Advanced knowledge of a subject relating to ethics and education in Islam, acquired independently by the study of Arabic primary sources and the secondary literature.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ara.612: Secular Modernity and Islam - Advanced Studies**	8 C 2 WLH

Learning outcome, core skills: Students learn how to analyze a subject related to secular modernity in the Arab world independently while consulting and utilizing respective sources for this purpose. They are introduced to the theoretical foundations of research on secular modernity and Islam and combine questions relating to secular modernity with philological analysis. Text sources from different fields of the Arabic intellectual history (from the late 19th century to the present) are studied, discussed and placed in the context of current scholarly debates. The students thus deepen their intercultural competences and acquire a profound understanding of contemporary religious, political and cultural discourses in Islamicate societies, which enables them to critically analyze media discourses on Islam and take an informed approach to respective public debates. Students write a term paper, by which they demonstrate the ability to deal academically with questions pertaining to the given subject areas, based on their knowledge of Arabic primary sources and the specialist secondary literature.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar	2 WLH
Course: Independent Studies	
Examination: Oral presentation (approx. 20 minutes) and term paper (max. 20 pages) **Examination requirements:** Advanced knowledge of a subject related to secular modernity in the Arab world acquired independently by the study of Arabic primary sources and the secondary literature.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Bio.141: General and applied microbiology**	3 C 3 WLH

Learning outcome, core skills: **Learning outcome:** Evolution and phylogenetic system; morphology and cell biology; communities and biocoenosis of bacteria and archaea; gene expression and molecular control (transcription, translation); posttranslational control, protein stability and proteomics; genetic networks; molecular switches and signal transduction; microbial developmental biology; mechanisms of pathogenicity of important pathogens; development of new antimicrobial agents; diversity of the metabolism in bacteria and archaea as basis for biotechnological applications; industrial microbiology. **Core skills:** Knowledge of microorganisms relevant for biotechnology and medicine, ability to identify these organisms and to analyse them with molecular methods.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: lecture: General and applied microbiology (Lecture)	3 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: detailed knowledge in cell biology, biochemistry and genetics of procaryotic microorgansims	

Admission requirements: can't be combined with core module M.Bio.101	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jörg Stülke
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.142: Molecular genetics and microbial cell biology**	3 C 3 WLH

Learning outcome, core skills: Advanced knowledge of Molecular Genetics and microbial cell biology through case studies of model systems of molecular mycology (yeasts and filamentous fungi). Acquisation of knowledge up to the "Review" level in one topic.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Molecular genetics and microbial cell biology (Lecture)	3 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: detailed knowledge in cell biology, biochemistry and genetics of eucaryotic microorgansims	

Admission requirements: Can´t be combined with core module M.Bio.102 or key competence module M.Bio.172.	**Recommended previous knowledge:** • Watson, Molecular Biology of the Gene, Pearson, 7th Edition • Alberts, Molecular Biology of the Cell, Garland, 5th Edition
Language: English	**Person responsible for module:** Prof. Dr. Stefanie Pöggeler
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.144: Molecular cell biology of plant-microbe interactions and stress adaptation**	3 C 3 WLH

Learning outcome, core skills: Upon completion of the module, students will be familiar with fundamental concepts of plant-microbe interactions at the cellular and molecular level and with plant adaptation mechanisms to abiotic stress factors. They will understand the results of current and relevant publications and will be able to critically evaluate them.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Plant-microbe interactions (Lecture) *Contents*: • Plant-microbe interactions: models, defense mechanisms, PAMP- and effector-induced immunity • Resistance to biotrophic and necrotrophic pathogens • Hormone-dependent signaling pathways, systemically acquired resistance • Plant responses to abiotic stress (drought, heat) • Gene regulatory networks, stress memory	3 WLH
Examination: Written examination (54 minutes)	3 C

Examination requirements: The exam tests the extent to which students understand the basic concepts and analytical methods of plant-microbe interactions and plant adaptation mechanisms to abiotic stress factors and can summarize them concisely.	

Admission requirements: cannot be combined with M.Bio.104	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Volker Lipka
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.156: Structural biochemistry**	3 C 3 WLH

Learning outcome, core skills: Methods in Structural Biology,structure and function of biological macromolecules. Structure and folding of proteins, structure-function relationships, protein-protein and protein-nucleic acid complexes. Structure-based drug-design	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: lecture: Structural Biology (Lecture)	3 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: The students show that they know the basics of structural biology. They are familiar with biochemical and analytical methods in protein and macromolecular complex- analysis. They have deepened knowledge about selected proteins and protein complexes. The students know the basics in structural resolution and structural characteristics of proteins.	

Admission requirements: can't be combined with M.Bio.105	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ralf Ficner
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.157: Biochemistry and biophysics**	3 C 3 WLH

Learning outcome, core skills: Molecular biochemistry and biophysics of different classes of biomolecules, plant primary and secondary metabolism, lipid metabolism, lipids as signal molecules and secondary metabolites, biotechnological utilization and modification of storage substances, enzymes of lipid metabolism, modern biophysical methods for analysis of biomolecules Handling of state of the art equipment, critical dealing with current biochemical topics, detailed analysis of experiments and their presentation. Independent acquisition of professional knowledge from publications by active participation in the seminar.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: lecture: Biochemistry and Biophysics (Lecture)	3 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: • basic knowledge of different classes of biomolecules and their metabolism • knowledge about spectroscopy of molecules • biotechnologic techniques using plants	

Admission requirements: can't be combined with M.Bio.106	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ivo Feußner
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.158: Enzyme catalysis and biological chemistry**	3 C 3 WLH

Learning outcome, core skills: Catalytic mechanisms of enzymes, mechanisms of macromolecular complexes, biocatalysis, kinetics und thermodynamics of biochemical reactions, chemical model systems of enzymes, synthesis of biooligomers, synthesis of ligands, ligation techniques, array technologies	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: lecture: Enzyme Catalysis and Chemical Biology (Lecture)	3 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: • knowledge about kinetics and thermodynamics of biochemical reactions • knowledge about different organic synthesis mechanisms • knowledge about catalytic mechanisms of enzyme	

Admission requirements: can't be combined with M.Bio.107	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kai Tittmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.344: Neurobiology 1 (key competence module)**	3 C 2 WLH

Learning outcome, core skills: Profound knowledge of essential techniques in molecular, cellular and systemic neuroscience and their application.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: From gene to behavior (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Theoretical knowledge of the basic methods in neuroscience based on the contents of the lecture.	

Admission requirements: can't be combined with module M.Bio.304	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Martin Göpfert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 27	

Georg-August-Universität Göttingen **Module M.Bio.348: Human genetics**	6 C 4 WLH

Learning outcome, core skills: Profound knowledge of specific human genetic aspects and principles of research in human genetics. Understanding of the methods for identification, analysis and manipulation of genes and gene functions. Basic insights into the structure and function of the human genome. Critical analysis of results from scientific publications. Scientific presentation and discussion of data.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Human genetics (Lecture)	2 WLH

Course: Modern Aspects of Human Genetics (Seminar) *Course frequency:* each semester	1 WLH
Course: Tumor genetics (Seminar) active participation in both seminar series	1 WLH

Examination: written examination (60 min) and two oral presentations (ca. 45 min)	6 C

Examination requirements: Profound knowledge of specific aspects and the basic principles in human genetic research. Analysis and presentation of scientific data.	

Admission requirements: can't be combined with key competence module M.Bio.369	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. rer. nat. Anja Uhmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Bio.359: Development and plasticity of the nervous system (lecture)**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
The basics of the development and plasticity of the vertebrate nervous system are presented. Special emphasis is on the 3 following subjects: i) early development of the nervous system (induction and pattern formation, formation and survival of nerve cells, development of specific axonal projections, synaptogenesis), ii) developmental plasticity (experience- and activity-dependent development of the brain, critical periods) and iii) adult plasticity and regeneration (learning-induced plasticity, cellular mechanisms of plastic changes, neurogenesis, therapies after brain lesions). Deepened knowledge, up-to-date research results and understanding of scientific approaches in the field of the development and plasticity of the nervous system.	Attendance time: 28 h Self-study time: 62 h

Course: lecture: Development and plasticity of the nervous system (Lecture)	2 WLH
Examination: Oral examination (approx. 15 minutes)	3 C

Examination requirements:	
Profound knowledge of recent reserach and understanding of scientific methods in the field of development and plasticity of the nervous system.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Siegrid Löwel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Georg-August-Universität Göttingen **Module M.Bio.360: Development and plasticity of the nervous system (seminar)**	3 C 2 WLH

Learning outcome, core skills: The students learn to present up-to-date publications on the development and plasticity of the nervous system and to discuss the results critically in a seminar report. Deepened knowledge, up-to-date research results and understanding of scientific approaches in the field of the development and plasticity of the nervous system. Critical discussion of up-to-date literature, scientific debate, sharpening of critical thought, promotion of multidisciplinarity. Training in presentation techniques and scientific writing.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: seminar: Development and plasticity of the nervous system (Seminar)	2 WLH
Examination: oral presentation (~ 20 min) and essay (~ 8 pages)	3 C

Examination requirements: Profound knowledge of recent research and scientific methods in the field of development and plasticity of the nervous system.	

Admission requirements: attendance of M.Bio.359	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Siegrid Löwel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Bio.366: Introduction to behavioral biology**	3 C 3 WLH

Learning outcome, core skills: The students have learned the basic concepts in behavioral biology with emphasis on behavioral ecology, sociobiology and cognition under special consideration of the quantitative aspect of behavioral research. They are able to present and discuss scientific issues in written form.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Introduction to behavioral biology (Lecture)	2 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: The students demonstrate profound knowledge of basic concepts of behavioral biology with special emphasis on behavioral ecology, sociobiology and cognition.	

Admission requirements: cannot be combined with M.Bio.306 or M.Bio.346	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Oliver Schülke
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module M.Bio.369: Human genetics (key competence module)**	3 C 2 WLH

Learning outcome, core skills: Profound knowledge of specific human genetic aspects and principles of research in human genetics. Understanding of the methods to identify, analyze and manipulate genes and their function. Basic insights into the structure and function of the human genome.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Human genetics (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Profound knowledge of specific aspects and the basic principles in human genetic research.	

Admission requirements: can't be combined with key competence module M.Bio.348	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. rer. nat. Anja Uhmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Bio.392: Current Developmental Biology**	6 C 4 WLH

Learning outcome, core skills: Learning objectives: In depth knowledge of theoretical principles in developmental genetics, biochemistry, and biology as well as of practical methodology in analyzing morphogenetic and pattern formation processes. Understanding of methods to identify and analyze gene function as well as manipulate embryos. Knowledge of databases for *in silico* sequence analysis and model system specific databases. Insights into the evolution of developmental processes.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Developmental biochemistry, genetics, and biology (Lecture)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Oral presentation of a publication (ca. 20 min)	6 C

Course: Exercises to and consolidation of lecture contents (tutorial)	1 WLH

Course: Current Topics in Developmental Biology (Seminar)	1 WLH

Examination requirements: Advanced knowledge of principles in developmental genetics, biochemistry, and biology with emphasis on morphogenetic and pattern formation processes as well as focus on signal cascades and gene networks that control developmental processes. Understanding of techniques to identify, analyze, and manipulate the function of developmental genes as well as developmental processes. Knowledge of diverse model organisms with their strength and weaknesses. Application of this knowledge to new scientific questions.	

Admission requirements: cannot be combined with M.Bio.321 or M.Bio.393	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ernst Anton Wimmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module M.Bio.393: Current Developmental Biology**	3 C 3 WLH

Learning outcome, core skills: In depth knowledge of theoretical principles in developmental genetics, biochemistry, and biology as well as of practical methodology in analyzing morphogenetic and pattern formation processes. Understanding of methods to identify and analyze gene function as well as manipulate embryos.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Developmental biochemistry, genetics, and biology (Lecture)	2 WLH
Course: Exercises to and consolidation of lecture contents (tutorial)	1 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: Advanced knowledge of principles in developmental genetics, biochemistry, and biology with emphasis on morphogenetic and pattern formation processes as well as focus on signal cascades and gene networks that control developmental processes. Understanding of techniques to identify, analyze, and manipulate the function of developmental genes as well as developmental processes. Knowledge of diverse model organisms with their strength and weaknesses. Application of this knowledge to new scientific questions.	

Admission requirements: cannot be combined with M.Bio.321 or M.Bio.392	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ernst Anton Wimmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module M.Bio.394: Frontiers in Neural Development**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** In-depth knowledge of neural development of insects. In-depth knowledge of principles and mechanisms of neural development of vertebrates and insects (among others: regionalization of the neuroectoderm, axon guidance, synaptogenesis, neural stem cells, glia). Knowledge of the most important model systems for neuro-developmental biology. Basic insights into the evolution of neural development. In-depth knowledge of the most important experimental approaches in neuro-developmental biology. **Core skills:** Conception of experiments to answer scientific questions using modern methods.	**Workload:** Attendance time: 50 h Self-study time: 130 h

Course: Development and Evolution of the Nervous system (Lecture)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Presentation and discussion of self-developed experimental approaches	6 C

Course: Exercises and consolidation of lecture ‚Development and Evolution of the Nervous system' (tutorial)	1 WLH

Course: Conception of experiments with modern methods (Seminar)	1 WLH

Examination requirements: Knowledge of the neural development of vertebrates and invertebrates. Knowledge of different model systems and their respective strengths and disadvantages. Knowledge of modern methods for the analysis of neural development. Applying this knowledge to new scientific questions (for example, designing experiments and discussing possible outcomes).	

Admission requirements: can't be combined with M.Bio.322 or M.Bio.395	**Recommended previous knowledge:** Basics in developmental biology (e.g. module M.Bio.321 or respective textbook chapters) Basics of vertebrate neural development (e.g. module M.Bio 359 or respective textbook chapters)
Language: English	**Person responsible for module:** Prof. Dr. Gregor Bucher
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

5	

Georg-August-Universität Göttingen **Module M.Bio.395: Frontiers in Neural Development**	3 C 3 WLH

Learning outcome, core skills: In-depth knowledge of neural development of insects. In-depth knowledge of principles and mechanisms of neural development of vertebrates and insects (among others: regionalization of the neuroectoderm, axon guidance, synaptogenesis, neural stem cells, glia). Knowledge of the most important model systems for neuro-developmental biology. Basic insights into the evolution of neural development. In-depth knowledge of the most important experimental approaches in neuro-developmental biology.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Development and Evolution of the Nervous system (Lecture) can't be combined with M.Bio.322 or M.Bio.392	2 WLH
Course: Exercises and consolidation of lecture ‚Development and Evolution of the Nervous system' (tutorial)	1 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: Knowledge of the neural development of vertebrates and invertebrates. Knowledge of different model systems and their respective strengths and disadvantages. Knowledge of modern methods for the analysis of neural development.	

Admission requirements: can't be combined with M.Bio.322 or M.Bio.394	**Recommended previous knowledge:** Basics in developmental biology (e.g. module M.Bio.321 or respective textbook chapters) Basics of vertebrate neural development (e.g. module M.Bio 359 or respective textbook chapters)
Language: English	**Person responsible for module:** Prof. Dr. Gregor Bucher
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module M.Biodiv-NF.400: Species identification**	4 C 5 WLH

Learning outcome, core skills: At the end of the course the participants will be able to identify a large proportion of the taxa covered, both in the field and in collections. They will be familiar with important survey methods and advanced tools such as AI-aided online identification. They will be able to find and survey species in their natural habitats.	**Workload:** Attendance time: 70 h Self-study time: 50 h

Course: Species identification (Exercise) One of the following courses: • Pollen analysis • Identification, diversity and ecology of mosses and lichens • Identification, diversity and ecology of grasses • Identification, diversity and ecology of birds • Identification, diversity and ecology of moths • Identification, diversity and ecology of *Hymenoptera* • Identification, diversity and ecology of other taxa depending on the availability of course facilitators	5 WLH
Examination: Protocol (max. 10000 words)	4 C

Examination requirements: Participants will need to describe the key identification features. They will need to understand how to use field guides, taxonomic keys and online AI tools for identification.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Johannes Kamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1

Additional notes and regulations: This module can only be taken if there are remaining places available in the identification exercises.

Georg-August-Universität Göttingen **Module M.Biodiv-NF.415: Evolutionary biology**	4 C 3 WLH

Learning outcome, core skills: Upon completion of the module, students will be familiar with fundamental concepts of the different elements of the theory of evolution and the current state of knowledge on the origin of the biological diversity on earth. They will be able to apply theoretical methods of evolutionary biology and evaluate the mechanisms underlying the evolution of organisms.	**Workload:** Attendance time: 42 h Self-study time: 78 h

Course: M.Biodiv.415.1: Evolutionary biology (Lecture) *Course frequency:* each winter semester	1,5 WLH
Course: M.Biodiv.415.3: Phylogeography (Lecture) *Course frequency:* each summer semester	1,5 WLH
Examination: Written examination (90 minutes) **Examination requirements:** The module examination consists of a written exam (**Klausur**), in which students are required to recall and remember various theories and findings from evolutionary biology and apply their knowledge to solve scientific questions without the use of aids. Students should be able to verify the accuracy of statements about evolutionary theories. They should be able to correctly describe and compare evolutionary processes and their underlying principles.	4 C

Admission requirements: none	**Recommended previous knowledge:** Basics in phylogenetic systematics are expected.
Language: English	**Person responsible for module:** Prof. Dr. Ernst Anton Wimmer
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Additional notes and regulations:

The lectures are independent of each other and can be started in any semester (WiSe or SoSe).

The modules M.Biodiv.415 and M.Biodiv-NF.415 are mutually exclusive.

Georg-August-Universität Göttingen **Module M.Biodiv.400: Species identification and natural history**	8 C 9 WLH

Learning outcome, core skills: We provide the students with a toolbox to identify species from various taxonomic groups. We cover natural history, taxonomy and ecology, illustrate key ID characteristics of genera and species and introduce the participants to survey and – where applicable – collection and preservation methods. Identification courses with fieldwork components and the four one-day field trips allow the students to familiarize with the habitats of the species covered, in the cultural landscapes and forests of Göttingen and the surroundings. At the end of the course the participants will be able to identify a large proportion of the taxa covered, both in the field and in collections. They will be familiar with important survey methods and advanced tools such as AI-aided online identification. They will be able to find and survey species in their natural habitats.	**Workload:** Attendance time: 126 h Self-study time: 114 h

Course: M.Biodiv.400.1 Species identification and natural history (Course) One of the following courses: • Pollen analysis (400.1a) • Identification, diversity and ecology of mosses and lichens (400.1b) • Identification, diversity and ecology of grasses (400.1c) • Identification, diversity and ecology of birds (400.1d) • Identification, diversity and ecology of moths (400.1e) • Identification, diversity and ecology of *Hymenoptera* (400.1f) • Identification, diversity and ecology of other taxa depending on the availability of course facilitators (400.1h).	5 WLH

Course: M.Biodiv.400.2 Four one-day field trips • Two zoological one-day field trips • Two botanical and vegetation-ecological one-day field trips	4 WLH

Examination: Protocol (max. 30 pages) or exam (about 30 minutes) of the species identification course **Examination prerequisites:** Participation in four one-day field trips. Reports from each field trip (not graded)	8 C

Examination requirements: Participants will need to be familiar with key identification features and will need to understand how to use field guides, taxonomic keys and online AI tools for identification. They will need to be familiar with the natural history, ecology and habitats of the species covered.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Johannes Kamp

Course frequency: Each winter or summer semester	**Duration:** 1-2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Biodiv.402: Plant ecology and ecosystems research**	6 C 4 WLH

Learning outcome, core skills: The students • acquire an overview of the most important habitats all over the world and their respective vegetation and ecology • acquire profound knowledge of the habitats of exemplarily selected climate zones and their ecology • know basic correlations between climate, soil and vegetation on different continents • acquire a global overview of the anthropogenous causes of ecosystem burdens and biodivesity loss	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vegetation and ecology of the world (Lecture)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Participation in seminar and seminar talk (max. 25 minutes)	6 C

Course: Plant ecology and ecosystems research (Seminar)	2 WLH

Examination requirements: Understanding of the ecosystems' and global perspectives of plant ecology and of consequences of anthropogenic impacts on ecosystems' biodiversity and conservation issues.	

Admission requirements:	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Biodiv.403: Vegetation ecology and vegetation history**	6 C 4 WLH

Learning outcome, core skills: The students acquire knowledge and a profound understanding of temporal and spatial vegetation patterns; one focus lies on biomes, climate zones and other large-scale vegetation areas, another focus lies on biological and geobotanical principles and basics on different scale levels and in different natural environments. Perception and knowledge in basic and applied fields of advanced vegetation ecology, vegetation history, sociology and chorology of plants, conception and reception of scientific papers; presentation skills.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vegetation ecology and vegetation history (Lecture)	2 WLH

Course: Modern issues of vegetation science in agricultural landscapes (Seminar)	2 WLH
Examination: Seminar talk (30 minutes)	6 C

Examination requirements: Knowledge of temporal and spatial vegetation patterns with focus on biomes, climate zones and other large-scale vegetation areas.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 16	

Georg-August-Universität Göttingen **Module M.Biodiv.404: Animal ecology**	6 C 4 WLH

Learning outcome, core skills: The lecture presents principles and theories of ecology and introduces current topics of ecological research. Topics include population ecology, interactions in animal communities, food webs, biodiversity and ecological theories.The seminar covers current topics of ecological and evolutionary research. In the seminar the students acquire advanced knowledge of methods and strategies to analyze ecological communities. Knowledge of ecological theories and modelling. Principles of animal populations and food webs. Experimental and statistical methods for the analysis of animal communities. Knowledge of current topics of animal ecological and evolutionary biology research.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Topics of animal ecology and evolution (Seminar)	2 WLH

Course: Animal ecology (Lecture)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Seminar talk (approx. 20 Minutes) **Examination requirements:** Knowledge of ecological principles and theories, population models. Functional responses, analysis and modelling of biotic interactions and food webs. Biodiversity and ecosystem functioning.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Scheu
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Biodiv.405: Botanical or zoological field trip**	4 C 4 WLH

Learning outcome, core skills: The students participate in a field trip (at least 10 days, “Große Exkursion”). Field trips of all departments and other institutions at the Faculty of Biology and Psychology will be accepted. Field trips of other faculties will be accepted if they have a focus related to biodiversity, ecology, evolution or conservation. Field trips will typically comprise the study of habitats and land-use types, observation, surveys or collection of species, and interaction with local scientists. Field trips might also contain stakeholder interactions, lectures and seminars or lab work. After completing this module, students will be able to familiarize themselves with ecosystems and land-use types not found in the study region around Göttingen, from regional (e.g. northwest Germany) destinations to regions on other continents (e.g. in the tropics). The will study species in their natural habitats, and will learn about their evolution, biogeography, ecology and conservation.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Botanical or zoological field trip One regional or international field trip of at least 10 days duration with botanical or zoological focus.	4 WLH
Examination: Protocol (max. 20 pages) or seminar talk (approx. 20 min.), not graded	4 C

Examination requirements: Participants have gained insight into the ecosystems visited, have acquired species identification knowledge and knowledge about the biodiversity, evolution and ecology of flora, fauna and habitats, and have understood social-ecological systems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Mark Maraun
Course frequency: Each winter or summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Biodiv.412: Conservation biology**	6 C 4 WLH

Learning outcome, core skills: In 412-1, we provide a comprehensive overview of the foundation and history of conservation science, including underlying theories and principles in ecology and biodiversity research. In 412-2, we cover an introduction to trends in biodiversity and illustrate drivers of biodiversity decline such as habitat loss, fragmentation and degradation, overexploitation, climate change, and invasive species. We introduce methods to monitor biodiversity and ecosystem services. We conclude with international approaches to counteract biodiversity loss and critically discuss the role of protected areas, conservation management and ecosystem restoration. The seminars complement the lecture topics and cover recent debates in conservation biology, conservation in agricultural landscapes and global policies in environmental protection and conservation. **Core skills acquired:** By the end of the lecture, students will have understood the state of global biodiversity, major threats and mitigation measures. They will be able to develop conservation strategies, to critically judge conservation initiatives, and to advise decision makers.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Conservation biology (Lecture) One lecture from the following options: • M.Biodiv.412-1: Origins of Conservation Biology (Waltert) • M.Biodiv.412-2: International Nature Conservation (Kamp)	2 WLH
Examination: Written examination, M.Biodiv.412-1 or M.Biodiv.412-2 (90 minutes) **Examination prerequisites:** Seminar talk (approx. 20 minutes)	6 C

Course: Conservation biology (Seminar) One seminar from the following options: • M.Biodiv.412-3: Current topics in Conservation Biology (Kamp) • M.Agr.0089: Ecological Seminar (Westphal)	2 WLH

Examination requirements: Participants understand the state of biodiversity, drivers of declines and mitigation measures in various habitats, globally. They have a comprehensive understanding of the methods used in conservation science, both for the natural and social science. They are able to make informed judgements on conservation management, actions and policies. They are able to connect different topical areas of conservation conceptually.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Johannes Kamp

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:
The seminar M.Agr.0089 in M.Biodiv.412 and module M.Agr.0089 are mutually exclusive.

Georg-August-Universität Göttingen **Module M.Biodiv.415: Evolutionary biology**	6 C 4 WLH

Learning outcome, core skills: Upon completion of the module, students will be familiar with fundamental concepts of the different elements of the theory of evolution and the current state of knowledge on the origin of the biological diversity on earth. They will be able to apply theoretical methods of evolutionary biology and evaluate the mechanisms underlying the evolution of organisms. They will understand the results of current and relevant publications on evolutionary biology and will be able to present and critically discuss them.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: M.Biodiv.415.1: Evolutionary biology (Lecture) *Course frequency:* each winter semester	1,5 WLH
Course: M.Biodiv.415.3: Phylogeography (Lecture) *Course frequency:* each summer semester	1,5 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Seminar Presentation (presentation 20 min., discussion 10 min.). Students demonstrate in the form of a presentation that they can apply their acquired knowledge on evolutionary theories to critically analyse and judge international publications in the field of evolutionary biology. **Examination requirements:** The module examination consists of a written exam (**Klausur**), in which students are required to recall and remember various theories and findings from evolutionary biology and apply their knowledge to solve scientific questions without the use of aids. Students should be able to verify the accuracy of statements about evolutionary theories. They should be able to correctly describe and compare evolutionary processes and their underlying principles.	6 C

Course: Evolutionary biology (Seminar) *Course frequency:* each semester	1 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ernst Anton Wimmer
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 18	

Additional notes and regulations:
The lectures are independent of each other and can be started in any semester (WiSe or SoSe).

The modules M.Biodiv.415 and M.Biodiv-NF.415 are mutually exclusive.

Georg-August-Universität Göttingen **Module M.Biodiv.417: Research colloquia and project management**	6 C 5 WLH

Learning outcome, core skills: **Learning outcome:** The module consists of two parts. In the research colloquium, students are required to attend 14 research colloquia or symposia of at least 45 minutes over the course of one or several semesters. Colloquia can be organized by any institution of the Göttingen Campus. Colloquia that cover topics related to Biodiversity, Ecology, Evolution, and Conservation will be accepted, as well as those involving related fields such as sustainability or land use. In the project management, students develop a written research proposal for the MSc thesis and defend this proposal in an oral presentation. Proposal and presentation cover the development of research hypotheses, sampling designs, potential ways to analyze collected data, expected results and a time-scale. **Core skills acquired:** Module participants will have gained an overview of current topics in the disciplines covered by the colloquia talks and will have widened their disciplinary horizon. They will be prepared to start field or lab work for their thesis, will be prepared to deal with potential pitfalls and challenges, and will manage their thesis project efficiently.	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: Research colloquium Attendance of 14 talks in research colloquia (at least 45 min) over one or several semesters	1 WLH

Course: Project management Development of a written thesis proposal together with the supervisors and defense of the written proposal in an exam situation (presentation + questions).	4 WLH
Examination: Collegial examination (approx. 30 Min.) **Examination prerequisites:** Successful participation in 14 colloquia talks **Examination requirements:** Participants have acquired a broad background in biodiversity research: ecology, evolution, and conservation. Participants have read and synthesized the literature relevant for their thesis topic. They are able to plan the sampling design, lab work, and data analysis for a MSc thesis in a timely and efficient way.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Chair of examination board
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Biodiv.421: Plant ecology: Project course plant ecology**	6 C 8 WLH

Learning outcome, core skills: This module is meant for students to learn about • ecosystems in selected habitats in Germany as well alternatively in European or non-European regions (e.g. the Tropics/Subtropics) • principal causal connections between vegetation, climate, soil conditions, as well as land-use effects on ecosystem processes in the region • identification of characteristic plant species in the respective research region • insights of practical assessment of ecological research in the field • application and usage of respective scientific literature for oral and written presentation of the adopted study results	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Basics of the essential aspects of scientific working in plant ecology (Seminar)	1 WLH

Course: Analyses of ecological research projects and writing of scientific publications (Practical course)	6 WLH

Examination: Lab report (scientific article based on project data) (max. 15 pages) **Examination requirements:** Knowledge of the essential aspects of scientific working in plant ecology from the experimental design to a publication. Written protocol about the outcomes of the research project in form of a scientific manuscript.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module M.Biodiv.422: Plant Ecology: CO2 and water relations of trees**	6 C 8 WLH

Learning outcome, core skills: After completing this module students • have in-depth knowledge of the theoretical basics of plants gas exchange and water balance and its dependence on the environment, • have theoretical and practical knowledge of modern measurement technology of tree ecophysiology, • have in-depth knowledge of the theoretical basics of plants gas exchange and water balance and its dependence on the environment, • have in-depth knowledge of the effects of global warming on the ecophysiology of trees, • can independently carry out measurements of photosynthesis performance, leaf conductivity, on xylem sap flow, leaf water status and the microclimate on old and young trees in the open field, • have practical experience in carrying out ecophysiological and microclimatic measurements on the Göttingen Canopy Walkway in the Experimental Botanical Garden, • can differentiate between functional types of different tree species, • can present the results from measuring studies on carbon and water balance of plants in accordance with scientific standards in writing and orally.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Basics of CO2 and water relations in trees (Lecture)	2 WLH

Course: Photosynthesis, respiration und transpiration (Practical course)	6 WLH

Examination: Lab report (max. 10 pages)	6 C

Examination requirements: Knowledge of the ecophysiology of trees with a focus on CO2 and H2O balance. Fundamentals of plant gas exchange, in particular photosynthesis and respiration. Knowledge of transpiration and the role of plants in the "soil-plant-air" continuum. Knowledge of xylem sap flow, leaf conductance, and the driving abiotic climatic and edaphic variables.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.423: Plant ecology: Study of habitats**	6 C 8 WLH

Learning outcome, core skills: In this module students • learn about theoretical and methodological basics of modern plant ecological site description • gain an overview of the most prominent European beech forest communities and their prevalent soil and microclimate site conditions • learn modern methods in examining microcliate variables of different forest sites • learn modern methods for the analyses of physical-chemical soil variables (incl. pH value, C and N contents, plant available nutrient contents) • practice scientific standards in presenting the study results in oral and written form	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Basics of ecological studies on forest ecosystems (Lecture)	2 WLH

Course: Ecological studies of forest ecosystems near Göttingen (Exercise)	6 WLH

Examination: Lab report (max. 20 pages) **Examination requirements:**	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Biodiv.424: Field studies of plant ecology, phytodiversity, and ecosystems research**	6 C 8 WLH

Learning outcome, core skills: In this module the students learn about • ecosystems in selected habitats in Germany as well alternatively in European or non-European regions (e.g. the Tropics/Subtropics) • principal causual conections between vegetaion, climate, soil conditions, as well as land-use effects on ecosytem processes in the region • identification of characteristic plant species in the respective research region • insights of practical assessment of ecological research in the field • application and usage of respective scientific literature for oral and written presentation of the adopted study results	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: National and international field studies (Exercise) Excursion region vary between years	6 WLH

Course: Ecosystems and field work (Seminar)	2 WLH

Examination: Report (max. 10 pages)	6 C

Examination requirements: Knowledge of various ecosystems in Germany and abroad, including the tropics, based on practical on-site observation. Knowledge of biodiversity in these ecosystems and their existence or endangerment due to anthropogenic influence. Knowledge of sustainable management and the effects of anthropogenic overuse on ecosystems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: on demand in summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.425: Evolution of embryophyta**	6 C 4 WLH

Learning outcome, core skills: Students are familiarised with latest research in the area of organismic evolution of embryophytes through the study, presentation and discussion of current case studies on speciation, evolutionary history, chromosomal and genomic evolution, reproductive biology, evolution of characteristics and coevolution. They gain an overview of new theoretical and methodical research approaches to understanding the evolution of plants. They gain the ability to develop evolutionary biology hypotheses and can select suitable model systems and methods to test hypotheses. Students learn the practical skills of presentation, interpretation and discussion of results (in scientific English). They can describe and understand evolutionary processes, hypotheses and methods and give examples for case studies of land plants. They are capable of giving presentations in English and discussing scientific results in English.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Speciation and evolution of land plants (Lecture) *Course frequency:* each winter semester	2 WLH

Course: Plant systematics and phycology (Seminar) *Course frequency:* each semester	2 WLH

Examination: Written examination (70% of the overall grade) (60 minutes) **Examination prerequisites:** Participation in seminar and oral presentation (approx. 45 min) (30% of the overall grade) **Examination requirements:** In the written examination students demonstrate their abilities to understand and discuss evolutionary processes and hypotheses as well as their knowledge of case studies of land plants. In the seminar they must give a talk in scientific English and present the new results of research from the literature or from their own Master thesis.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Elvira Hörandl
Course frequency: Lecture: each winter semester; Seminar: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Biodiv.426: Reproduction and evolution of flowering plants**	6 C 4 WLH

Learning outcome, core skills: Students gain detailed knowledge of the reproductive strategies and developmental biology of flowering plants. They develop a broad understanding of the relevance of reproductive biology to the evolution and ecology of plants, to general evolutionary biology issues (e.g. the paradox of gender) and to areas of application in plant breeding. Specific methodological skills for active research are learned through experimental work, karyological and embryological analyses (microscopic observation, seed flow cytometry) and statistical analyses. Students can answer questions on the reproductive and developmental biology of plants and on evolutionary biology hypotheses, and know about practical areas of application. They are capable of planning, conducting and presenting scientific studies in the area of reproductive plant biology.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Developmental and reproductive biology of flowering plants (Practical course)	3 WLH

Course: Reproductive strategies of flowering plants (Lecture)	1 WLH

Examination: Oral examination on lecture material (approx. 15 min.) **Examination prerequisites:** Protocol of the practical course (max. 12 pages) **Examination requirements:** In the oral examination students demonstrate their skills in the reproductive and developmental biology of flowering plants, in evolutionary biology hypotheses and in practical areas of application. The result shows their skills in planning, conducting and presenting a scientific study in the area of reproductive plant biology.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Biodiv.425
Language: English	**Person responsible for module:** Prof. Dr. Elvira Hörandl
Course frequency: every second summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.428: Biodiversity and biogeography of embryophyta**	6 C 4 WLH

Learning outcome, core skills: Students are familiarised with the biodiversity of land plants in floristic areas outside Germany and learn the principles of geobotanics, ecology and evolutionary history in selected areas (Alps / Mediterranean-Makaronesien area / Tropics). They gain an overview of the biodiversity, distribution, adaptations (e.g. flower biology, life forms) and ecological niches (e.g. altitudinal layers) in the relevant habitats. They develop skills in planning and conducting field trips, in the techniques of collecting and preparation, use of identification tools and documentation techniques (e.g. geo-referencing).	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to tropical, Mediterranean-Makaronesien or Alpine floras (Seminar)	1 WLH

Course: Field course (2 weeks), alternately to the tropics, Mediterranean-Makaronesien area or the Alps (Excursion)	3 WLH

Examination: Report of the field trip (max. 15 pages) **Examination prerequisites:** Seminar talk (approx. 30 min.) **Examination requirements:** Knowledge of the geobotanics, ecology, biodiversity and evolution of land plants in the floral area visited. Botanical fieldwork skills: documentation of geo-referenced habitats, observation data, identification results and where relevant collected plant material.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Elvira Hörandl
Course frequency: Biennual; alternately in the regions	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.430: Project study in palaeoecology and palynology**	6 C 8 WLH

Learning outcome, core skills: In-depth study of pollen analysis and palaeoecologically working methods, independent determination and documentation of pollen and spore types, preparation, presentation and evaluation of palaeoecologically data, use of software, familiarisation with current palaeoecologically topics. Independent, problem- and research-oriented pollen analysis studies as part of a small research project in the field of vegetation history, climate and environmental history, as well as scientific discussion of palaeoecologically topics, written and oral presentation of results.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Current topics in palynology and climate dynamics (Seminar)	2 WLH

Course: Palaeoecology / Palynology (Exercise)	6 WLH

Examination: Lab report (max. 10 pages) **Examination prerequisites:** Seminar talk (approx. 15 Min.) **Examination requirements:** Knowledge of pollen and spore types; pollen analytical and palaeoecologically working methods. Fundamentals of palaeoecologically and ecology and the reconstruction of climatic events in the Quaternary on the basis of pollen diagrams and palaeoecologically.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Biodiv.431: Applied vegetation ecology and multivariate analysis**	6 C 8 WLH

Learning outcome, core skills: After successfully completing the module, students have acquired the following skills: • Problem-oriented implementation of a research project • Field sampling methods of vegetation ecology including vegetation sampling invarious types of grassland • Identification in both flowering and vegetative plant stage • Experience in current topics on the diversity, dynamics, management and conservation of grassland ecosystems • Evaluation and interpretation of multivariate data, Software applications forentering vegetation data, data processing and ordination analyses using R • Production and presentation of posters, Presentation of scientific research questions and results in written form.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Basics and Methods of vegetation ecological data collection and multivariate analysis (Lecture)	2 WLH

Course: Grassland vegetation and multivariate data analysis (Exercise)	6 WLH

Examination: Portfolio: Lab report (approx. 15 pages) and poster presentation (approx. 15 minutes)	6 C

Examination requirements: Proven knowledge of field sampling and multivariate analysis in vegetation science. Assessment of local grassland vegetation types. Knowledge in current topics on the diversity, dynamics, management and conservation of grassland ecosystems. Reporting along the standards of a scientific publication.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Friedemann von Lampe
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 16	

Georg-August-Universität Göttingen **Module M.Biodiv.433: Vegetation history: Multivariate analysis in palaeoecology**	3 C 4 WLH

Learning outcome, core skills:	**Workload:**
Palaeoenvironmental and archaeological data are usually multivariate and samples generally represent different times in the past. This short course aims to provide an overview and hands on training of numerical methods commonly used with such datasets as well as handling radiocarbon dates and deriving chronologies. Core skills: Most of the data analysis and presentation in graphs will be carried out in “R” and participants will thus gain or improve their ability to work in the R-environment. Previous knowledge of “R” is advantageous but not essential. Exercises will include classifications and ordinations and using the VEGAN package as well as constrained cluster, rate of change analysis and environmental reconstructions using RIOJA among other package. For radiocarbon calibration we will use the programs CALIB and QXCAL and explore the R-scripts CLAM and BACON for age depth modelling. Bayesian age depth modelling as implemented in BACON and QXCAL will be discussed.	Attendance time: 56 h Self-study time: 34 h

Course: Statistical analyses in palaeoecology (Lecture,Seminar)	1 WLH

Course: Multivariate analysis (Exercise)	3 WLH

Examination: Protocol (max. 10 pages) or presentation (approx. 15 min.)	3 C

Examination requirements: Understanding and practical experience of numerical methods and descriptive multivariate statistics in palaeoecology and vegetation science.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: biennually in the summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Biodiv.434: Introduction to the history of cultivated plants**	3 C 4 WLH

Learning outcome, core skills: The students acquire knowledge about the emergence of cultivated plants from wild plants (from wildtype to high-yielding crop plant): morphological changes, genetic principles, chronological processes of the dispersal history starting from the centers of origin/ manifolds. The students become acquainted with the tasks, methods and results related to research in vegetation history and archaeobotany (agricultural history). Upon completion of the module, students have the professional expertise to (microscopically) identify and address fossil plant remains or macro-remains (charred, not charred) and are able to microscopically identify wood species (carbonized, not caronized). They possess the ability to ecologically interpret species spectra for the reconstruction of the palaeo-environment.	**Workload:** Attendance time: 56 h Self-study time: 34 h

Course: Introduction to the history of cultivated plants (Lecture)	1 WLH

Course: Practical course of the history of cultivated plants - microscopic identification of subfossil plant remains (Exercise,Seminar)	3 WLH

Examination: Minutes / Lab report (max. 10 pages) **Examination requirements:** Knowledge of the emergence of high-yielding crops from wild plants. Skills for the identification of fossil plant residues or macro-remains and the ecological interpretation of species spectra for the paleo-environmental reconstruction.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Biodiv.435: Field studies in phytodiversity, vegetation ecology and palaeoecology**	6 C 8 WLH

Learning outcome, core skills: Familiarisation with vegetation types in initially unknown natural areas including their temporal development and dynamics, methods of vegetation analysis, methods of palaeoecology vegetation analysis, methods of palaeoecology, exercises to identify plants, exercises to collect samples and vouchers, familiarisation with scientific collections and environmental archives, experience with field studies abroad, familiarisation with topics of phytodiversity, vegetation ecology and palaeoecology. Independent collection of vegetation and environmental data, use of non-German floras and identification keys, implementation and organisation of field studies abroad, scientific data collection during field studies, presentation of results on vegetation ecology, phytodiversity and palaeoecology.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Phytodiversity and paleoecology of a natural and cultural area (Seminar)	2 WLH

Course: International field studies (Exercise)	6 WLH

Examination: Minutes / Lab report (max. 20 pages) **Examination requirements:** Knowledge of different types of vegetation including their temporal dynamics in Central European and non-European natural areas. Knowledge of the working methods of scientific collections and environmental archives. Methods of palaeoecology.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.437: Methods in palaeoecology**	6 C 8 WLH

Learning outcome, core skills: The students learn different methods of palaeoecology: e.g. analysis of tree rings, charcoal, algae, diatoms, ostracods, dinoflagellates, non-pollen palynomorphs (NPPs), amoebae, sediment parameters, etc. They acquire knowledge of different palaeoecological parameters in relation to the environment, vegetation, climate and human settlement history and their evaluation in the context of global change research. They learn methods of visualisation and analysis and how to use modern software. Students learn about the wide range of possible applications using current palaeoecological topics as examples. Ability to assess the possible applications of palaeoecological analyses in environmental, vegetation and climate history and archaeological investigations. Independent implementation of smaller, problem- and research-oriented palaeoecological studies in the field of environmental, vegetation and climate history. Scientific analysis of palaeoecological topics in global change research, presentation of results.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Methods in palaeoecology (Lecture)	1 WLH
Course: Methods in palaeoecology (Exercise)	5 WLH

Course: Current research results in palaeoecology and palynology (Seminar)	2 WLH

Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Presentation of the results of practical work	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hermann Friedrich Behling
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Biodiv.441: Animal ecology: Evolutionary ecology**	6 C 8 WLH

Learning outcome, core skills: The course explores the ecology and evolution of **oribatid mites** (Arachnida: Acariformes), also known as box mites, key decomposers in soil ecosystems. Over three weeks, you will investigate how below-ground systems differ from above-ground environments and why evolutionary principles may operate differently in soil-dwelling communities. Week 1 introduces soil ecosystems and their fauna. You will collect and identify oribatid mites, then prepare samples for DNA extraction and sequencing. Week 2 focuses on molecular data analysis and the basics of phylogenetics, providing essential tools for studying evolutionary relationships. Week 3 is dedicated to a *Mini Research Project* , where you will design and test your own research question using collected and public molecular data. Working in small teams, you will organize tasks, analyze results, and present your findings. By combining fieldwork, molecular techniques, and data analysis, this course offers a hands-on introduction to soil biodiversity and evolutionary research	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Evolutionary ecology (Lecture)	2 WLH

Course: Evolutionary ecology - experiments (Exercise)	6 WLH

Examination: Questionnaire (approx. 30 min.) and oral presentation (approx. 15 minutes)	6 C

Examination requirements: Basic understanding of the phylogenetic relationships within Oribatida. Practical experience with molecular biology techniques, including DNA extraction, PCR amplification, and DNA purification. Familiarity with bioinformatic approaches such as sequence alignment, models of sequence evolution, and phylogenetic tree reconstruction.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bastian Heimburger Prof. Dr. Stefan Scheu
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.442: Community ecology of animals**	6 C 8 WLH

Learning outcome, core skills: After completing this module, students can • analyse animal communities in ecological studies. The focus is on soil animal taxa. • ask scientific questions and posit hypotheses that can be tested. • sample animals and determine on species level, including taxa such as earthworms, spiders, beetles, diplopods, isopods, mites and collembolans. • collect environmental data from the study regions. • analyse animal and environmental data using univariate and multivariate techniques such as NMDS, DFA, PCA, DCA in R. • explain their findings in an oral presentation. Eventually, they summarize their findings in a ‘paper’ which has the same style as a scientific publication in an international journal.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Community ecology (Lecture)	2 WLH

Course: Community ecology - experiments (Practical course)	6 WLH

Examination: Report (max. 10 pages) and oral presentation (approx. 15 minutes) **Examination requirements:** Knowledge of the invertebrate fauna of Germany, especially soil animals, such as earthworms, spiders, beetles, diplopods, isopods, mites and collembolans. Knowledge on univariate and multivariate statistical methods. Knowledge on scientific writing and data presentation.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Mark Maraun
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.443: Field studies in animal ecology and zoological biodiversity**	6 C 8 WLH

Learning outcome, core skills: Students learn in-depth analysis of animal communities in the Mediterranean region. The communities studied are analyzed taxonomically and the data collected are evaluated using experimental-statistical methods and ordination procedures. Existing knowledge of the diversity of animals and plants in different ecosystems is deepened. For this purpose, gradients are sampled in terrestrial or marine habitats of the Mediterranean region (e.g. altitudinal gradients, light gradients, temperature gradients, disturbance gradients). The animals occurring there are counted, identified and assigned to trophic groups. Furthermore, possible environmental factors that could be responsible for the composition of the respective animal communities are investigated. The results are analyzed using statistical programs such as R and Canoco. Basic knowledge of statistics and knowledge of the organismic diversity of marine and terrestrial ecosystems are desirable. Students acquire specialist skills in terrestrial and marine animal communities of Mediterranean regions.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Field research in animal ecology and zoological biodiversity (Seminar)	2 WLH

Course: Field studies of Mediterranean systems (Exercise)	6 WLH

Examination: Minutes / Lab report (max. 20 pages) **Examination prerequisites:** Seminar talk (approx. 20 minutes) **Examination requirements:** Qualitative and quantitative knowledge of terrestrial and marine animal communities of the Mediterranean region; knowledge of biodiversity levels and assignment to trophic animal groups. Knowledge of the influence of environmental factors on these animal communities.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Scheu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 18	

Georg-August-Universität Göttingen **Module M.Biodiv.445: Analysis of soil food webs and trophic interactions**	6 C 8 WLH

Learning outcome, core skills: Students will develop their own research projects on forest soil food webs. This will involve sampling of soil animals and analysing, interpreting and presenting the collected data. Specifically, students will learn to: • Quantitatively sample soil arthropods (centipedes, millipedes, spiders, springtails, woodlice) and earthworms in forests • Identify soil animal detritivores and predators to species level • Use stable isotope analysis and neutral fatty acid profiles to analyse the structure of soil food webs • Analyse and present the collected data using R Studio • Discuss and present relevant studies dealing with soil food webs • Understand the basic structure of soil food webs and the application of frequently used analytical tools to study them.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Molecular analysis of trophic interactions in soil food webs (Lecture)	2 WLH

Course: Molecular analysis of trophic interactions in soil food webs - experiments (Practical course)	6 WLH

Examination: Protocol (max. 15 pages) and oral presentation (approx. 15 minutes)	6 C

Examination requirements: Knowledge of the interrelationships, especially trophic interactions, of animal food webs in forest soils in theory and practice.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Scheu Dr. Melanie Pollierer, Dr. André Junggebauer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.446: Molecular zoology and insect-biotechnology**	6 C 8 WLH

Learning outcome, core skills: The module is aimed at students who want to gain in-depth knowledge of molecular genetic work in theory and practice. Relevant methods and experimental planning are taught theoretically and practically. Selected topics of molecular zoology are treated in depth in lectures and on the basis of current publications. Current developments of molecular methods in pest control and insect biotechnology will be covered. Learning objectives: • Application, experimental strategies and evaluation of different molecular biological methods. • Gene function analysis in zoology: how to identify relevant genes and how to study their function in model and non-model organisms? (including genetic screens, reverse genetics (RNAi), genome editing (CRISPR/Cas9), transgenesis) • Knowledge of databases of DNA, protein and gene function • Identification of orthologous genes in different species • Establishment of new molecular genetic model systems for zoological questions • Advanced discussion of current research topics in molecular zoology • Advanced discussion of recent approaches in insect biotechnology using molecular genetic methods (including pest control). Students should be able to: • design experimental strategies for the identification and analysis of gene function in non-model organisms • design the establishment of new molecular genetic model systems • be able to present and assess scientific questions on selected topics of molecular zoology.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Gene function analysis in diverse animals and applications in pest control (Lecture) *Contents*: molecular genetic methods; gene fuction analysis; selected topics from molecular zoology; most recent developments in insect biotechnology	2 WLH
Course: Topics of molecular zoology and insect biotechnology (Seminar)	2 WLH

Course: Molecular zoology and insect biotechnology (Exercise)	4 WLH

Examination: Oral Presentation (approx. 20 minutes)	6 C

Examination requirements: The students should be able to apply the contents and methods listed as “core skills” to new questions.	

Admission requirements: none	**Recommended previous knowledge:** none

Language: English	**Person responsible for module:** Dr. Vera Sophie Terblanche Prof. Dr. Gregor Bucher
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 8	

Additional notes and regulations:
The modules B.Biodiv.370 and M.Biodiv.446 are mutually exclusive.

Georg-August-Universität Göttingen **Module M.Biodiv.447: Biodiversity, ecology and evolution of terrestrial invertebrates**	6 C 7 WLH

Learning outcome, core skills: In-depth insight into the diversity of terrestrial arthropods, especially spiders and insects, and their importance in ecological systems. In-depth knowledge of the invertebrate fauna of Central Europe. In-depth knowledge of the ecology and evolution of terrestrial invertebrates. Key competencies: Overview of the diversity of terrestrial arthropods, in-depth knowledge of dichotomous identification keys, analysis and assessment of identification characters, in-depth knowledge of the ecology and evolution of terrestrial invertebrates.	**Workload:** Attendance time: 98 h Self-study time: 82 h

Course: Biodiversity, ecology and evolution of terrestrial invertebrates (Lecture)	2 WLH

Course: Biodiversity, ecology and evolution of terrestrial invertebrates (Exercise)	5 WLH

Examination: Lab report (max. 50 pages)	6 C

Examination requirements: In-depth knowledge of the diversity, evolution, and ecology of terrestrial invertebrates.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Scheu
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Biodiv.450: Impact of global climate change on plant communities and their functional traits**	6 C 8 WLH

Learning outcome, core skills: The students • have profound knowledge of interactions between plants • have an overview of completion research • understand the concept of “functional traits” of species and communities • are able to analyze the reaction of plants to the main factors of global climate change experimentally • have profound knowledge of the design and statistical (variance analytical) analysis of ecological experiments • are able to present the results of ecological experiments in accordance with scientific standards in written and oral form.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Impact of global climate change on plant communities (Lecture)	2 WLH

Course: Impact of global climate change on plant communities (Exercise)	6 WLH

Examination: Minutes / Lab report (max. 10 pages)	6 C

Examination requirements: Knowledge of plant interactions and of the concept of “functional traits”. Knowledge of experimental methods and statistical procedures in botanical (population) ecology. Knowledge of strategies for the adaption of plants to climate change.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Dietrich Hertel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.462: Assessing the genetic biodiversity of algae and cyanobacteria – a practical lab course**	6 C 8 WLH

Learning outcome, core skills: After completing this module, students have knowledge of and expertise in state-of-the art DNA sequence analysis methods for detecting changes in the biodiversity of algae and cyanobacteria from environmental samples (freshwater creek benthos or surface soils of forests, grass and arable land) at the species and genotypic resolution. The students have skills in • independent molecular analyses, incl. DNA extraction from various environmental materials (e.g., soil, rock surface biofilms), PCR amplification using various genetic markers, amplicon-based NGS metabarcoding, DNA sequence phylogenetic analyses • employment of bioinformatic analyses for the refinement of raw DNA sequences from paired-end approach, development of taxon tables to show the distribution of Amplicon Sequence Variants along environmental gradients and identification of species and genotypes by sequence comparisons • basic statistical analyses of the data and common methods for the visualization of the results • microscopy of algae and cyanobacteria, establishment of pure culture strains and their analyses using DNA sequencing and phylogenetic methods	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Biodiversity and evolution of algae (Lecture)	2 WLH

Course: Molecular methods for determining biodiversity using the example of algae (Practical course)	6 WLH

Examination: Report (max. 15 pages) and oral presentation (approx. 20 minutes) **Examination requirements:** Knowledge of DNA methods for the analysis of the biodiversity of algae and cyanobacteria incl. standard bioinformatic and phylogenetic analyses	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Thomas Friedl
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 6	

Georg-August-Universität Göttingen **Module M.Biodiv.470: Morphology of animals: Microscopical methods in comparative morphology**	6 C 8 WLH

Learning outcome, core skills: Microscopical techniques, in particular Confocal Laser Scanning Microscopy (CLSM), Serial Block Face Scanning Electron Microscopy (SBFSEM) and Scanning Electron Microscopy (SEM) reveal diverse and detailed insights into the morphology of various organisms. By applying different microscopical techniques a broad spectrum of characters can be studied, ranging from surface structures, organ systems, tissues, cell types to the ultrastructure of cell organelles. With help of selected specimens the theory and methodology of the three mentioned microscopical techniques are explained while addressing the advantages, limits and disadvantages of each technique. We offer the possibility to investigate self-designed studies and/or current scientific topics of the department. The aim of this module is to become familiar with various microscopical techniques, to gain skills and expertise in methods, and to achieve a minimum of experience in operating the different types of microscopes.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Introduction into microscopical methods and preparation techniques (Lecture)	2 WLH

Course: Comparative microscopical investigations of animal tissues and organ systems (Exercise)	6 WLH

Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Theoretical basics of various microscopical techniques and practical skills in preparation of specimens for these techniques; characterization of organ systems, tissues and cell types, ultrastructure of cells; 3D-visualisation	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. rer. nat. Christian Andreas Fischer Dr. Conrad Helm
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 6	

Georg-August-Universität Göttingen **Module M.Biodiv.478: Field studies in systematics, biodiversity and ecology of marine invertebrates**	6 C 8 WLH

Learning outcome, core skills: Students acquire in-depth knowledge of zoological systematics, biology, ecology and biodiversity of marine invertebrates. In particular communities of rocky shores and sandy beaches are analysed and compared. This includes the identification of marine invertebrates, the ecological characteristics of the different habitats and the systematics of various animal groups, e.g., Annelida, Plathelminthes or Cnidaria. One focus is on the demonstration and realisation of various methods for collecting marine animals. Field work takes place during low tide or is carried out with the help of a research vessel. After an introduction to the diversity of marine invertebrates, students will carry out their own field or laboratory experiments on given questions. The practical course takes place at the marine biology station "Estación de Biología Marina de A Graña" in Galicia, Spain. Alternatively, it can also be carried out at stations in other European countries or in Germany.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Introduction to marine biology (Lecture)	2 WLH

Course: Field studies in systematics, biodiversity and ecology of marine animals (Exercise,Seminar)	6 WLH

Examination: Oral Presentation (approx. 15 minutes)	6 C

Examination requirements: Knowledge of different marine invertebrates and their systematics, biology and ecology. Knowledge of marine habitats.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Christoph Bleidorn
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.479: Phylogenomics**	6 C 6 WLH

Learning outcome, core skills: The research field of phylogenomics comprises the utilization of genome and transcriptome data for the inference of phylogenetic trees. In this modul students will be introduced to the theoretical and practical knowledge of how to assemble genomes and transcriptomes and their annotation. Moreover, techniques to search for genes in such data will be presented (e.g., BLAST, hidden markov models). Additionally, the students will work with different alignment- and read mapping methods. Based on the assembled datasets different tree reconstruction methods will be conducted (Neighbor Joining, Maximum Parsimony, Maximum Likelihood, Bayesian Inference) and critically discussed. Within an accompanying seminar actual studies in the field of evolutionary genomics are presented and discussed. Students get an introduction into the Linux environment and the installation of all programs will be done independently. The command line will be mainly used for all analyses. Students will learn to perform genome-scale analyses for the reconstruction of phylogenetic trees. Within a seminar students will present recently published genomic studies in English language. In the last week, datasets will be analysed independently and results will be summarized as poster, which will be presented within a short talk.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Introduction to phylogenomics (Lecture)	1 WLH
Course: Introduction to phylogenomics (Seminar) This course is open for students of the double degree programme at the partner universities. The sessions of this course might be conducted in a remote format like online video conference.	1 WLH

Course: Introduction to phylogenomics (Exercise)	4 WLH

Examination: Short talk (approx. 15 minutes) and poster presentation	6 C

Examination requirements: Knowledge of how to reconstruct phylogenetic trees using genomic and transcriptomics data. Critical discussion of phylogenetic analyses and overview of actual controversies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Christoph Bleidorn Dr. Joëlle van der Sprong
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students:	

15	

Georg-August-Universität Göttingen **Module M.Biodiv.480: Nature conservation inventories**	6 C 8 WLH

Learning outcome, core skills: For effective nature conservation the collection of reliable data on state and trend of the occurrence and abundance of animals and plants, on their habitats and on habitats shaping land use systems is indispensable. The planning and implementation of nature conservation measures and the evaluation of their effectiveness depend on the quality of information provided by nature conservation inventories and monitoring. At first the students will practically apply various data collection methods used in conservation practice and evaluate their advantages and disadvantages.The students then learn methods for surveying a selected species group (woodpeckers) and different methods for recording the composition, structure and utilization of Central European forest ecosystems. Students collect themselves data in the field under supervision and process and analyze them with integration of long-term data from a monitoring project. The students develop skills (a) to critically analyze and evaluate data sets and survey methods in nature conservation, (b) to plan and implement goal-oriented data collection in a statistically robust design, (c) to map habitats and species, (d) to manage data in databases and analyze them using statistical methods and geographic information systems and (e) to understand, structure and implement planning processes in conservation and to evaluate the information required.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Nature conservation inventories (Lecture)	2 WLH

Course: Nature conservation inventories (Exercise)	6 WLH

Examination: Minutes / Lab report (max. 20 pages) **Examination requirements:** Knowledge of (a) collecting and analyzing data relevant to nature conservation (sampling design, quality assurance, statistics, GIS), (b) data processing for nature conservation planning, (c) monitoring and evaluation of nature conservation measures, (d) nature conservation inventories.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. rer. nat. Hermann Hondong
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.482: Field studies in conservation biology**	6 C 4 WLH

Learning outcome, core skills: M.Biodiv.482 is a flexible module that allows for targeted ECTS credit collection. Credits will be awarded for one of the following activities: • An individual student research project, practical or internship, e.g. with a conservation NGO, in conservation administration or at a research institution. The project needs to be agreed with staff of the Conservation Biology department beforehand. • A tailored research project offered by members of the Conservation Biology Department, e.g. via https://uni-goettingen.de/en/join+us/129605.html. Students will acquire knowledge of ecosystems, species, conservation approaches, they will be involved in practical work of conservation practitioners (individual student project), or they will be trained individually in data collection, analysis and publication (internal research project).	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Field studies in conservation biology (Exercise) *Contents*: One of the following options: • Self-organized internship • Individual research project	4 WLH
Examination: Written protocol, internship report or research project report (max. 20 pages)	6 C

Examination requirements: Students are able to plan an internship or a research project. They are familiar with data collection and analysis protocols and understand the presentation of data. They are able to comprehensively summarize the outcome of an internship, or an individual research project. For research internships and individual research projects, reports can be submitted in the form of a peer-review paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Johannes Kamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Biodiv.488: Conservation biology: Ornithology**	6 C 8 WLH

Learning outcome, core skills: Students acquire knowledge on the recording and biology of native bird species. This includes knowledge of species characteristics (optical, acoustic), habitat requirements, food, breeding biology, wintering, population trends and causes of endangerment. An overview of bird orders, special sensory abilities of birds and a first insight into their social systems are also part of this. The nationwide and Europe-wide monitoring of breeding birds is taught. Students learn the visual and acoustic identification of bird species in the field and mapping methods. The method of territory mapping is deepened in the exercises and includes field surveys, data evaluation and presentation of the results on maps. The use of a digital tool for recording is taught. The students acquire knowledge to compare different habitats with regard to their avifauna. Competences: Knowledge of the biodiversity of the native avifauna and its ecology as well as field methods for its quantitative survey.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Biology of selected bird species (Lecture)	2 WLH

Course: Identification of birds in the field and methods in ornithology (Exercise)	6 WLH

Examination: Minutes / Lab report (max. 20 pages)	6 C

Examination requirements: Biodiversity of the indigenous avifauna as well as of field methods for its identification and evaluation of the endangerment potential on species and population level.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of the songs of the most common bird species
Language: English	**Person responsible for module:** Eckhard Gottschalk
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 18	

Georg-August-Universität Göttingen **Module M.Biodiv.490: Project studies in plant systematics, evolution and phylogeny**	6 C 4 WLH

Learning outcome, core skills:	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Research project	4 WLH
Examination: Minutes / Lab report (max. 20 pages) **Examination prerequisites:** Short written proposal with a working plan for the research stay (max. 5 pages) **Examination requirements:** Capacity to present a coherent research plan and implement it practically.	6 C

Admission requirements: M.Biodiv.425	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Elvira Hörandl
Course frequency: each semester; (by agreement)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 3	

Georg-August-Universität Göttingen **Module M.Biodiv.491: Next generation sequencing for evolutionary biology**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
The students acquire knowledge of the various systems and techniques for “next generation sequencing”. The focus of the module lies on the fast developing field of bioinformatics and data analysis (dry lab). Corresponding wet lab methods are explained and discussed. The students learn the different possible applications for “next generation sequencing” data in evolutionary biology of animals and plants, for example biodiversity, phylogenomics, evolution of traits, adaption, phylogeography, population genetics and hybridization. They get an overview of the theory and gain practical experiences in this research area. They acquire the competence to choose suitable methods for evolutionary questions and to test hypotheses on non-model organisms. The students are able to list the differences and (dis)advantages of various “next generation sequencing” methods and to select suitable methods to analyze specific evolutionary questions by use of non-model organisms. They are able to compare and analyze the raw data of “next generation sequencing” and to annotate genes of an assembled genome. The students shall present and discuss case studies from the field of “next generation sequencing” during the seminar in scientific English	Attendance time: 56 h Self-study time: 124 h

Course: M.Biodiv.491-1 Next generation sequencing: methods, data analysis and applications (Lecture)	0,5 WLH
Course: M.Biodiv.491-2 Next generation sequencing: examples of botanical and zoological studies (Seminar)	0,5 WLH

Course: M.Biodiv.491-3 Analysis of next generation sequencing data (Exercise)	3 WLH

Examination: Oral presentation (20 minutes) **Examination requirements:** Knowledge of the various applications of "next generation sequencing" in evolutionary biology of animals and plants. Overview of the theory and practical experiences in this new research area.	6 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of the various applications of "next generation sequencing" in evolutionary biology of animals and plants. Overview of the theory and practical experiences in this research area.
Language: English	**Person responsible for module:** Dr. Natascha Dorothea Wagner
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.Biodiv.492: Molecular methods for “Next Generation Sequencing” in Evolutionary Biology and Systematics**	6 C 4 WLH

Learning outcome, core skills: Students will receive a detailed introduction to the application of next generation sequencing methods for phylogenetic and evolutionary studies in plants and animals. They will gain practical and theoretical knowledge on the application of short Illumina-based and long Nanopore-based sequences. Students will learn how to prepare libraries for Illumina and Nanopore sequencing. Competence for specific laboratory methods (DNA extraction, quality check, probe design, library preparation, target enrichment of selected genes, and the different sequencing techniques) as well as basic knowledge of data analysis will be acquired. An introduction to computer analyzes of raw data from Illumina and Nanopore sequencers (basecalling, quality check and filtering, assembly, basic phylogenetic analyses) will also be given.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction into molecular markers (Lecture)	1 WLH

Course: Target enrichment and Nanopore sequencing (Exercise)	3 WLH

Examination: Minutes / Lab report (max. 12 pages)	6 C

Examination requirements: Through the protocol, students will document their competence in creating and analyzing genomic data from non-model organisms (plants and animals). The results will be interpreted in the context of a specific evolutionary or phylogenetic framework and presented in a lecture.	

Admission requirements: none	**Recommended previous knowledge:** Lecture „Speciation and Evolution of Land Plants“ in module M.Biodiv.425
Language: English	**Person responsible for module:** Dr. Salvatore Tomasello
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.605: Project studies in animal evolution and biodiversity**	6 C 4 WLH

Learning outcome, core skills: Consolidation of morphological and molecular approaches for evolutionary biology research in zoology. Introduction to the daily routine of work in a scientific laboratory with research questions, and their planning and conceptualization. Insights into the planning and writing of scientific publications. The scientific work might be carried out in the laboratory, outdoor and/or in research stations. Independent execution and planning of research studies. Interpretation, visualization and presentation of scientific results. Scientific discussion of current topics in animal evolution and biodiversity.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Research project (Exercise)	3 WLH

Course: Current topics in Animal Evolution and Biodiversity (Seminar)	1 WLH

Examination: Presentation (approx. 15-20 min.) and protocol in the form of a scientific publication (max. 15 pages)	6 C

Examination requirements: Elaboration and design of a scientific project and its implementation.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Christoph Bleidorn Prof. Dr. Maria Teresa Aguado
Course frequency: each semester; after consultation	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module M.Biodiv.610: Science Communication in Biodiversity Research**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Making science accessible to the general public is becoming increasingly important to address current global challenges. A fluent dialogue between scientists and policy makers, industry, and the rest of the society is absolutely necessary for science to have an influence in a positive and more sustainable future, for instance. Abilities in scientific outreach are gradually becoming one of the requirements in many job descriptions and research projects funded by governments, private companies and other institutions. However, learning how to communicate science has traditionally not been included in the curriculum of many scientific careers. This course provides the basic knowledge for scientists to effectively communicate about biodiversity to the general public. We will show how the Biodiversity Museum of the University of Göttingen can be used as platform for public outreach. The modul includes a lecture and a seminar to communicate the basics of science outreach, as well as a practical part where we will use the collections and tools of the Biodiversity Museum for individual projects. The main objectives of this course are: 1. Learn the fundamentals of science messaging and benefits of science communication to the society. 2. Communicate scientific knowledge to several different broad audiences, including general community members, youth, and policy makers. 3. Produce your own effective science communication in biodiversity, e.g interviews, videos, photos or a museum exhibition project.	Attendance time: 56 h Self-study time: 124 h

Course: Introduction to science communication (Lecture)	1 WLH
Course: Introduction to science communication (Seminar) A few sessions might be conducted in a remote format like online video conference.	1 WLH

Course: Science communication in biodiversity research (Exercise)	2 WLH

Examination: Project presentation (30 minutes)	6 C

Examination requirements: Knowledge of basics in science communication. Learning of different techniques to present scientific knowledge.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Maria Teresa Aguado Molina
Course frequency: each winter semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Biodiv.611: Biodiversity research in the museum**	6 C 4 WLH

Learning outcome, core skills: Museums play a fundamental role in advancing scientific knowledge, particularly in the biological sciences. Their extensive collections, international collaborations, and curatorial expertise are essential for research in taxonomy, systematics, and comparative anatomy. This course provides students with the knowledge and practical skills to investigate biological questions using a zoological collection. Through lectures, seminars, hands-on practical sessions, and readings, students will learn the significance of natural history collections for biodiversity research, develop identification skills across a range of taxa, and gain experience in comparative anatomical analysis. Emphasis will be placed on using museum specimens to compare morphology, recognize diagnostic features, and build scientifically robust projects based on collections. The Zoological Collections of the Biodiversitätsmuseum comprise more than 120,000 specimens, ranging from flatworms and extinct birds to the complete skeleton of a sperm whale. These specimens hold scientific, cultural, and historical value. While some are on public display at the Forum Wissen, the majority are stored in the museum's research collections, accessible for study and investigation. **Main Contents:** • Value of natural history collections and their impact on biodiversity and anatomical research • Developing identification skills using museum specimens across diverse taxa • Comparative anatomy and morphological analysis of zoological specimens • Current scientific research in museums: from taxonomy to museomics • Designing and conducting collection-based research projects • Digitization, scientific illustration, and specimen documentation • Preservation, management, and ethical use of zoological collections	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Biodiversity research in the museum (Lecture)	1 WLH
Course: Biodiversity research in the museum (Seminar)	1 WLH

Course: Biodiversity research in the museum (Exercise)	2 WLH

Examination: Project presentation (approx. 20 minutes) **Examination requirements:** Realization of a scientific project using the collection of the Biodiversitätsmuseum and presentation of the project.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Maria Teresa Aguado Molina

Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Che.1135: Special Topics in NMR Spectroscopy**	3 C 2 WLH

Learning outcome, core skills: Die Absolvent*innen dieses Moduls haben Kenntnisse über Entkopplung-, Editing-, sowie die wichtigsten 2D NMR-Methoden und den Nuclear-Overhauser-Effekt, Dynamische Effekte, Feldgradienten, Diffusion ortsaufgelöste NMR-Spektroskopie und Magnetresonanz-Imaging, NMR in anisotroper Umgebung und Festkörper-NMR sowie NMR-Spektroskopie an paramagnetischen Verbindungen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Special Topics in NMR Spectroscopy	2 WLH
Examination: Oral examination (approx. 20 minutes)	

Examination requirements: Kompetente Darstellung des eigenen Forschungsthemas mit Bezug zur NMR-Spektroskopie oder eines ausgewählten NMR-Themas, Diskussionskompetenz	

Admission requirements: keine	**Recommended previous knowledge:** Grundkenntnisse der NMR-Spektroskopie (entsprechend Modul B.Che.1004).
Language: English	**Person responsible for module:** Dr. Michael John
Course frequency: each summer semester1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 3
Maximum number of students: 24	

Additional notes and regulations: Bei der Platzvergabe für das Lehrangebot haben Promovierende Vorrang.

Georg-August-Universität Göttingen **Module M.Che.1315: Chemical Dynamics at Surfaces**	6 C 5 WLH

Learning outcome, core skills: The students of this module will achieve a deeper theoretical knowledge of chemical dynamics on surfaces as well as their influence on other fields in natural science, in order that they will be able to approach and solve problems regarding the quantitative questions in this field.	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: Chemical Dynamics at Surfaces (Lecture)	3 WLH
Examination: Written examination (180 minutes)	6 C

Course: Chemical Dynamics at Surfaces (Exercise)	2 WLH

Examination requirements: By Understanding and solving exemplary questions regarding this research field with the help of limited reference material in predetermined time will count as minimum 50 % of the required score	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alec Wodtke
Course frequency: irregular (every second or third semester)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 2
Maximum number of students: 64	

Additional notes and regulations: Active participation in provided tutorial is recommanded.

Georg-August-Universität Göttingen **Module M.Cp.0004: Plant diseases and pests in temperate climate zones**	6 C 4 WLH

Learning outcome, core skills: Students will be able to recognize and identify the main pests and diseases, understand the origin, distribution and dynamics of diseases and pests in the field as a basis for the development of control methods.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Plant Diseases and Pests in Temperate Climate Zones (Lecture,Excursion,Exercise) *Contents*: The main diseases and pests (fungi, viruses, bacteria, nematodes, mites, and insects) of crops (arable crops, vegetables, fruit crops) in temperate climate zones will be presented. The symptoms, diagnosis, biology and life cycles, economic importance, possible control methods will be studied in lectures, practicals and field trips. The economic damage, prognosis, possible control methods using economic thresholds will be presented.	4 WLH
Examination: Written examination (45 minutes) **Examination prerequisites:** regular attendance at field practical and excursion **Examination requirements:** Identification and diagnosis of plant pests and diseases of crops of the temperate climate zones, knowledge of the life cycle, distribution, and population dynamics.	6 C

Admission requirements: Only for students in the study programmes “Crop Protection”, EMJMD PlantHealth and “Sustainable international Agriculture”.	**Recommended previous knowledge:** Once you have successfully completed module B.Agr.0346, Special Phytomedicine, you will no longer be able to take module M.Cp.0004, Plant Diseases and Pests in Temperate Climate Zones.
Language: English	**Person responsible for module:** Dr. Birger Koopmann
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Cp.0005: Integrated management of pests and diseases**	6 C 4 WLH

Learning outcome, core skills: Students will be able to understand and develop plant protection strategies to control plant pathogens and insect pests while observing the sustainability of the whole crop production system.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Integrated Management of Pests and Diseases (Lecture) *Contents*: The integrated pest management concept and its main components are presented with regard to the management of fungal plant pathogens and insect pests in temperate zones: preventive methods, selective use pesticides, effect of cultural methods (sowing date, soil preparation, fertilization, crop rotation, varieties) on occurrence, distribution and damage of plant pathogens and insect pests.The diagnostics and quantification of damage symptoms; prognosis systems are discussed.	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Knowledge of the relationship between crop production methods and the occurrence of plant diseases and insect pests in temperate zones, concept of integrated pest management.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexey Mikaberidze
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 1 - 6; Master: 1
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Cp.0006: Pesticides I: Mode of action and application techniques, resistance to pesticides**	6 C 4 WLH

Learning outcome, core skills: Students will know the pesticide compounds used in agriculture, their mode of action, application techniques and understand the development of resistance and resistance management strategies.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Pesticides I: Mode of Action and Application Techniques, Resistance to Pesticides (Lecture,Excursion) *Contents*: Mode of action and application techniques of plant protection products (fungicides, insecticides, acaricides, herbicides), the characeristics of active ingredients are presented. Technical and technological possibilities of modern crop protection, requirements and pesticide resistance management is discussed.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of pesticides, their mode of action, targets, side effects, application techniques; important factors for resistance development and possibilities for prevention and reduction.	6 C

Admission requirements: Only for students from the study programme "Crop Protection" and "Sustainable International Agriculture"	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexey Mikaberidze
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 1 - 6; Master: 1
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Cp.0007: Pesticides II: Toxicology, Ecotoxicology, Environmental Metabolism, Regulation and Registration**	6 C 4 WLH

Learning outcome, core skills: Students will understand the basic and applied pesticide toxicology and ecotoxicology, the development of pesticides and risk assessment, and the regularory framework of pesticide registration and pesticide risks (Germany, EU)	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Pesticides II: Toxicology, Ecotoxicology, Environmental Metabolism, Regulation and Registration (Lecture) *Contents*: This unique module gives an overview of all aspects of pesticide science, presented by Several lecturers, being specialists. Basic and applied toxicology of pesticides , ecotoxicology of pesticides, environmental fate and metabolism of compounds in different environments, development of pesticides, regulation of pesticide use and registration.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of the toxicology of pesticides, ecotoxicology, fate and metabolism in the environment, regulation and registration of pesticides in Germany and the EU.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexey Mikaberidze Dr. Rebecka Dücker
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 3
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Cp.0012: Weed biology and weed management**	6 C 6 WLH

Learning outcome, core skills: Understanding the biology and control of local and globally important weeds, their taxonomy, life-forms and habitat requirements, as well as their evolution, 30 h distribution, ecology, population dynamics and genetics. Endangered, as well as invasive species, the interactions of weeds and crops (allelopathy and competition) and weed control with direct and indirect measures will be taught.	**Workload:** Attendance time: 30 h Self-study time: 150 h

Course: Weed Biology and Weed Management (Lecture,Excursion,Seminar) *Contents*: The module consists of a lecture, the visit of a field trial and the creation of a herbarium in own work according to instructions. In the lecture knowledge about sustainable weed control and the biology of plant species and their potential as weeds is imparted. Direct and indirect control strategies to regulate weeds, considering economic and ecological aspects, are presented. The lecture deals with solutions for individual production systems and their transferability discussed. Advantages and disadvantages of weed control for health, economy, society and ecology are covered. For the herbarium 30 plant species that occur in the agricultural landscape are to be collected in bloom (20-25 dicots and 5-10 monocot species). The plants must be identified correctly. Information about their relevance in the agricultural landscape should also be provided in short form (ecological values, aspects of crop competition and peculiarities).	6 WLH
Examination: Written exam (60%; 60 minutes) and a herbarium prepared in home work (40%) **Examination prerequisites:** Submission of the herbarium **Examination requirements:** Basic knowledge on the biology and ecology of arable weeds and knowledge about direct and indirect measures of weed control as well as the ability to identify key weed species.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Rebecka Dücker
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

30	

Georg-August-Universität Göttingen **Module M.Cp.0014: Plant Nutrition and Plant Health**	3 C 2 WLH

Learning outcome, core skills: Understanding the relationship between plant nutrition and plant health and its significance in the value-added food chain.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Plant Nutrition and Plant Health (Lecture,Seminar) *Contents*: Nutrient uptake and transport in the plant; function of different nutrients in the plant especially with respect to plant health (susceptibility, tolerance, resistance); mechanisms to increase the efficiency of nutrient availability, uptake and use; characteristics of plant health, effect of nutrient imbalances on plant metabolism and development of plant harvest products, the nutrient concentrations and processing quality.	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of and ability to present the presented topics in their context: development of nutritional and processing quality in different crop plants; quality requirements and ways of realization by crop production methods.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Klaus Dittert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.Cp.0016: Practical statistics and experimental design in agriculture**	6 C 4 WLH

Learning outcome, core skills: The aim of the course is to familiarize students with the basic concepts of statistics and their application in agricultural science. The second goal is to learn the use of software packages like SAS.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Statistics and Experimental Design in Agriculture (Lecture,Exercise) *Contents*: In the beginning of the course, students are introduced to the basic concepts of statistics like frequency distributions, the normal distribution and hypothesis testing. They are also introduced to software packages like SAS, that are used for the practical exercises. Regression and correlation analysis are then introduced. Different experimental designs like randomized block, latin square, and split plot are described and analyzed by one-way analysis of variance or as factorial experiments. Generalized Linear Models will be used and multivariate data will by analyzed by cluster and principal component methods. A large amount of examples and exercises constitute an important aspect of the course, enabling the students to understand and assimilate the theoretical content. Practical analyses of example data sets also provide the students with the required experience and skills for future statistical tasks in the context of Mastertheses.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of the basic concepts of statistics and their application in agricultural science and in the use of software packages like SAS.	6 C

Admission requirements: none	**Recommended previous knowledge:** Mathematics, statistics
Language: English	**Person responsible for module:** Dr. Christian Kluth
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Additional notes and regulations: This module and M.Agr.0036 "Methodisches Arbeiten: Versuchsplanung und -auswertung" are mutually exclusive.

Georg-August-Universität Göttingen **Module M.DH.01: Advanced Topics in Digital Humanities**	6 C 4 WLH

Learning outcome, core skills: The students • have an overview of central methods and theories from one or more subject areas of the Digital Humanities; • are able to comprehend and discuss the scientific discussions about it; • are familiar with the complexity, heterogeneity or fuzziness of data in the humanities and the specific characteristics of the Digital Humanities; • know typical examples for the scientific categorisation of texts, persons, images and objects, ideas and processes and can relate them to each other; • can discuss, test and, if necessary, modify these approaches with regard to their applicability.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture	2 WLH
Course: Seminar	2 WLH
Examination: Presentation (approx. 20 min.) with written elaboration (max. 10 pages) **Examination prerequisites:** Regular participation in the seminar **Examination requirements:** The students discuss research results of the Digital Humanities and have the ability to evaluate methods and theories and to modify them in approaches.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Martin Gustav Langner
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EP.015a: Peer-to-Peer Assistantship in Anglophone Literature and Culture**	6 C

Learning outcome, core skills: Advanced students revise basic knowledge of literary and cultural theories and deepen their understanding by explaining and critically discussing them with other students. They reflect on possible approaches in literary analysis[BS1] . They revise basic knowledge of academic writing and deepen it by explaining several features, e.g. bibliography, research paper, methodological chapters, to other students, providing guidance for each other.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Peer-to-peer meetings *Contents*: The student tutors one up to three first-semester master student(s) in literary and cultural courses with a special focus on the understanding and usage of literary and cultural theories under academic aspects. The sessions take place regularly upon consultation, at least 6 times during the semester. The mentoring is supervised by a lecturer of the department.	
Examination: Portfolio (max. 3500 words), not graded **Examination requirements:** Proof of at least 6 regular meetings with the assigned mentees. Proof of counselling on the following areas: Understanding of literary and theoretical texts; working with secondary literature; applying theoretical frameworks to a text/texts of a certain topic; feedback about approaches. Reflecting on learning progress of mentees.	6 C

Admission requirements: Obligatory counselling with lecturer of the theory-based lecture in module M.EP.01c to prove a high-enough level of knowledge of theories and approaches.	**Recommended previous knowledge:** Successful attendance of a master module finishing with a term paper in Anglophone literary and cultural studies; successful attendance of mentoring training.
Language: English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 7	

Additional notes and regulations:
The aim of this module is to assist first-semester master students to understand the methods and mindsets of the British Literature and Culture department through peer-to-peer mentoring.

Georg-August-Universität Göttingen **Module M.EP.01a: Anglophone Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: • To deepen and consolidate the content and methodology of literature and cultural studies previously acquired in the BA programme in British Studies. • A competency of synergetic use of literature and cultural studies methodologies through the combination of diachronic and synchronic approaches in the courses listed below.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lectures on English literature and Cultural Studies	2 WLH
Course: Independent Study on British Cultural Studies *Contents*: For the Independent Study portion of the module the students works on a thematically focused research topic for theory- and method-based self study. The student will make use of relevant research methods, primary and secondary sources, and outline potential theses which result from scholarly dialogue with the instructor. Students will develop the competence to work independently and scientifically, and thereby learn to reflect critically upon their work. During this part, which consists of 60 hours of the 124 hours of self study required in total, students will deepen their methodological competency and theoretical knowledge. Assistance is offered in max. two meetings during the instructor's office hours; the assessment of progress during the semester will be done by means of an ungraded portfolio.	
Examination: Final Written Exam (90 min.) or Oral Exam (20 min.)	6 C

Examination requirements: • basic knowledge of a literature- and cultural-history epoch • a secure survey- and contextual knowledge of the topics, texts and literature- and cultural history methods worked on in the lectures	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EP.01b: North American Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: • To broaden and consolidate the content and methodology of literature and cultural studies previously acquired in the BA program in North American Studies. • A competency of synergetic use of literature and cultural studies methodologies through the combination of diachronic and synchronic approaches in literature or lectures on literary-, cultural-, or media- theory and "Advanced American Cultural History and Rhetoric."	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Lecture on American literature and cultural studies, or lecture on literary, cultural, or media theory (Lecture)	2 WLH
Course: Independent Study () *Contents*: deepens and broadens the contents of the lecture through a close study of primary and secondary texts; aims at a more profound preparation of the final exam; takes up about 100 hours of the self-study time allotted for the module in total	WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: Students show that they have a good survey knowledge and can successfully complete transfer tasks on topics, primary and secondary texts that are discussed in the lecture and which they have deepened during their independent studies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder Prof. Dr. Andrew Gross
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 80	

Georg-August-Universität Göttingen **Module M.EP.01c: Anglophone Literature and Culture: Theoretical Foundations**	12 C 4 WLH

Learning outcome, core skills: Students acquire • a deepened and broadened knowledge of literary theories and cultural theories; • a deepened and broadened understanding of the literary analysis of all major genres; • a deeper understanding of approaches in literary analysis, from the perspective of academic writing; • the ability to independently analyze core texts using appropriate theories.	**Workload:** Attendance time: 84 h Self-study time: 276 h

Course: Course Practising Advanced Literary Analysis (for MA Students) (Seminar) *Contents*: In this course students review their knowledge of analytical terms and approaches and deepen their understanding of them. They sharpen their skills on academically writing about analytical results.	1 WLH
Examination: final exam (90min) or take-home essay (500 Wörter), not graded **Examination requirements:** Students demonstrate that they can write a coherent text analysis that addresses, evaluates and critically assesses core areas of text analysis specific to the text type. These include the setting of the text; the narrative situation and communicative situation; the imagery of the text; themes, structures and patterns; effect on the readership. Students also demonstrate that they are familiar with the relevant technical terms and can write the text analysis correctly using technical language.	3 C

Course: Course on literature and cultural theory (Seminar) *Contents*: Students review or acquire overview knowledge on literary and cultural theories. They practise using theoretical approaches on literary texts or literary topics. They deepen their knowledge on academic writing on literary analysis and hone their research and assessment skills on secondary sources.	2 WLH
Examination: Portfolio (max. 5000 words) **Examination requirements:** Studierende weisen nach, dass sie Kenntnisse in einer literarischen oder kulturellen Theorie auf einen Text, ein Thema oder eine Gattung innerhalb einer Epoche der anglophonen Literatur- und Kulturgeschichte anwenden können. Sie weisen vertiefte Überblickskenntnisse zu literaturanalytischen Begriffen und Herangehensweisen nach sowie gute Kenntnisse in der Verschriftlichung von literatur- bzw. kulturanalytischen Herangehensweisen und Erkenntnissen. Sie weisen Grundkenntnisse zu Form und Funktion von schriftlichen wissenschaftlichen Arbeiten (Hausarbeit, Exposé/Abstract, Gliederung, Recherche von Primär-/Sekundärliteratur) nach sowie ihre Fähigkeit, eine wissenschaftliche Argumentation aufbauen zu können.	9 C

Course: Tutorial or self-study (Tutorial,) *Contents*: This tutorial/self-study unit accompanies both courses "Literary and Cultural Theories in Use" and "Close Reading".	1 WLH

Examination requirements: Students demonstrate that they can apply their knowledge of a literary or cultural theory to a text, topic or genre within an era of Anglophone literary and cultural history. They demonstrate in-depth overview knowledge of literary analytical terms and approaches as well as good knowledge in the writing of literary and cultural analytical approaches and findings. They demonstrate basic knowledge of the form and function of written academic work (term paper, exposé/abstract, outline, research of primary/secondary literature) as well as their ability to construct an academic argument.

Admission requirements: Obligatory Advisement	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Additional notes and regulations:

- This module is specifically aimed at students with little knowledge in the field of theory-based literary analysis or in the field of literary and cultural theories.
- Regular attendance as well as independent further study of the course contents are strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.020: English Linguistics (A)**	6 C 2 WLH

Learning outcome, core skills: • Deepening and broadening of BA-level linguistic knowledge and competence with regard to speech systems (phonology, morphology, syntax, semantics) and linguistic usage (pragmatics, socio-linguistics, psycho-linguistics) • Ability to apply linguistic methods and hypotheses in key fields of research in modern linguistics • Knowledge of and ability to critically analyze strategies of argumentation as well as make structured description of linguistic content.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Course on basic knowledge of English linguistics	2 WLH
Course: Independent Study on topics of advanced linguistics *Contents*: The qualification goals are: a) competence in developing specialized theoretical statements from research publications; b) competence in corresponding and correct application of linguistic theories on given speech phenomena in the prescribed field of study; c) advanced knowledge of the subject, as necessary for meaningful class participation, and as is necessary to acquire if not present prior to the beginning of the course. Independent studies comprise 75 hours of the total self-study and will generally require a minimum of three meetings with the instructor during the semester. Progress will be assessed in interviews and/or through written assignments, subject to prior agreement.	
Examination: Portfolio (max. 8000 words) **Examination prerequisites:** Regular participation with no more than two excused absences.	

Examination requirements: The students must demonstrate knowledge of the structural units and structural relationships of English, mastery of linguistic methods of analysis, and be able to give a structured representation of linguistics.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Clemens Steiner-Mayr
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 80	

Additional notes and regulations:
This module is designed exclusively for students with a basic knowledge of linguistics. This course cannot be taken if you have already taken or plan to take Module M.EP.021.

Georg-August-Universität Göttingen **Module M.EP.021: English Linguistics (B)**	6 C 2 WLH

Learning outcome, core skills: • Deepening and broadening of BA-level linguistic knowledge and competence with regard to speech systems (phonology, morphology, syntax, semantics) and linguistic usage (pragmatics, socio-linguistics, psycho-linguistics) • Ability to apply linguistic methods and hypotheses in key fields of research in modern linguistics • Knowledge of and ability to critically analyze strategies of argumentation as well as make structured description of linguistic content.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Main Seminar: Advanced Linguistics	2 WLH
Course: Project work on linguistic data *Contents*: In the project work (approx. 100 hours of independent study), students deepen their knowledge and skills on linguistic data, by means of feedback from lecturers, by working alone, with a partner or in small groups; they research and examine texts and work towards a term paper.	
Examination: Term Paper (max. 7500 words)	

Examination requirements: Demonstration of the ability to research and absorb relevant research on a linguistics-relevant subject, to extract relevant research questions, to analyze differentiated linguistic objects, and to select and evaluate an appropriate theory.	

Admission requirements: none	**Recommended previous knowledge:** Sound knowledge of linguistic areas and methods.
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 80	

Additional notes and regulations: This module is designed for students with an advanced knowledge of linguistics. This course cannot be taken if you have already taken or plan to take Module M.EP.020.

Georg-August-Universität Göttingen **Module M.EP.021 (AS): Linguistics (Advanced)**	8 C 4 WLH

Learning outcome, core skills: This module aims at students with a basic knowledge of linguistics. Students consolidate and expand on their knowledge of English linguistics concerning linguistics and their competences concerning the language system (mainly semantics) and the linguistic usage (pragmatics, sociolinguistics, psycholinguistics), as acquired in the bachelor programme. They learn to apply linguistic methods and hypotheses in modern linguistics' core field of research. They become acquainted with argumentation strategies and learn how to critically analyze them. They learn how to present linguistic contents in a well-structured manner.	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Course "English Linguistics: An Overview"	2 WLH
Course: Linguistic advanced seminar	2 WLH
Examination: Presentation (approx. 20 min.) and written assignment (approx. 6000 words)	8 C

Examination requirements: Students have to prove their ability to find research literature which is relevant for linguistically relevant subjects, to extract the relevant research questions, to scrupulously analyze the linguistic item, and to choose and evaluate an appropriate theory.	

Admission requirements: keine; empfohlen werden linguistische Grundkenntnisse	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Regine Eckardt
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.EP.022: English Linguistics (C)**	12 C 4 WLH

Learning outcome, core skills: • Deepening of BA-level linguistic knowledge and competence with regard to formal syntax and formal semantics and pragmatics, • improving the ability to apply linguistic methods and hypotheses in key fields of research in modern linguistics, • extending the ability to critically analyze strategies of linguistic argumentation.	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Introduction to Syntactic Theory (lecture/seminar) (Lecture,Seminar) *Contents*: This part of the module focuses on the formalization of syntactic knowledge and the implementation of syntactic theories. We focus on empirical phenomena such as sentence formation, questions, passives etc. and see how they are analyzed in a principled and theoretical way. Optional lab classes and tutorials put an emphasis on the practical application of the material covered in the lecture course.	2 WLH
Examination: Examination-like term paper (max. 3500 words) **Examination requirements:** The student must demonstrate knowledge of the syntactic relations of English, mastery of applying linguistic methods of analysis, and be able to give a formal representation of syntactic phenomena.	6 C

Course: Introduction to Semantic and Pragmatic Theory (lecture/seminar) (Lecture,Seminar) *Contents*: This part of the module focuses on the formalization of semantic and pragmatic knowledge and the implementation of semantic and pragmatic theories. We focus on empirical phenomena such as the meaning of questions, negation, quantification etc. and see how they are analyzed in a principled and theoretical way. Optional lab classes and tutorials put an emphasis on the practical application of the material covered in the lecture course.	2 WLH
Examination: Examination-like term paper (max. 3500 words) **Examination requirements:** The student must demonstrate knowledge of the semantic and pragmatic relations of English, mastery of applying linguistic methods of analysis, and be able to give a formal representation of semantic and pragmatic phenomena.	6 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of the terms and modern linguistic concepts.
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 80	

Additional notes and regulations:

This module is designed for students with little knowledge of the areas of theoretical syntax or semantics and pragmatics who wish to specialize in English linguistics. They can take additional lab classes which focus on the practical side of the syntactic and semantic and pragmatic theories.

The module can take the form of either

- a lecture series on syntax and semantics and pragmatics "Linguistic Theory – an overview" (4 hours, offered every WS) or
- two seminars (2 hours "Introduction to Syntactic Theory" offered every SS, and 2 hours "Introduction to Semantic and Pragmatic Theory" offered every WS).

Georg-August-Universität Göttingen **Module M.EP.02b: Medieval English Studies**	6 C 4 WLH

Learning outcome, core skills: After successful participation in the course, students should be able to • demonstrate text competence with regard to the chief works of medieval English literature • understand important literary theoretical questions and apply them with regard to medieval English texts • demonstrate a good knowledge of the materiality of medieval English manuscript transmission • utilize a good competence in English on an advanced academic level • recognize aspects of the alterity of medieval texts as a didactic stimulus for an encounter with the Middle Ages as an alien culture	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture series: Medieval Studies (Lecture) *Contents*: The lectures offer - in alternating semesters - a survey of the medieval literature of England, the historical development of English and selected subjects in the area of paleography, important language landmarks, and the cultural history of the English Middle Ages.	2 WLH
Examination: Written examination (30 minutes) **Examination requirements:** Successful candidates will demonstrate a good knowledge of the linguistic and literary/ poetical aspects of important works of the English Middle Ages, as well as a good knowledge of their historical and material contexts.	2 C

Course: Course: Medieval Studies (Seminar) *Contents*: The seminar offers a survey of the medieval literature of England, the historical development of English and selected subjects in the area of paleography, important language landmarks, and the cultural history of the English Middle Ages.	2 WLH
Examination: Term Paper (max. 3000 words) **Examination requirements:** Successful candidates will demonstrate a good knowledge of the linguistic and literary/ poetical aspects of important works of the English Middle Ages, as well as a good knowledge of their historical and material contexts, on the basis of which they will be able to develop a creative approach to an understanding of these texts.	4 C

Admission requirements: B.EP.204 or an alternative to B.Eng.601	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency:	**Duration:**

each semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 30	

Additional notes and regulations:

This module is aimed exclusively at students who already have taken courses on English Medieval Studies. Students who do not are required to take M.EP.02c instead.

The regular participation with no more than two excused absences is STRONGLY RECOMMENDED but NOT OBLIGATORY.

Georg-August-Universität Göttingen **Module M.EP.02c: Medieval English Studies 2**	6 C 4 WLH

Learning outcome, core skills: The successful participant will be able to demonstrate a good basic knowledge of medieval English literature, its genres and formal features as well as its historical context by way of key literary works of the period. He/She will gain competence in the field of historical English and will provide more end more refined translations of historical texts made with the help of suitable works of reference. He/She will be able to provide a close commentary on the relationship between form and function in selected medieval English works in writing and will have a first experience of medieval textual transmission in manuscript form.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Survey Lecture Medieval English Studies (Lecture) *Contents*: The lecture offers a survey of medieval English literature, English historical linguistics as well as of topics as far afield palaeography and codicology, literary theory, important individual works and medieval English culture. The focus varies every term.	2 WLH
Examination: Written examination (30 minutes) **Examination requirements:** Successful candidates will demonstrate a good knowledge of the linguistic and literary/ poetical aspects of important works of the English Middle Ages, as well as a good knowledge of their historical and material contexts.	2 C

Course: Introduction to Medieval English Literature and Culture (Seminar) *Contents*: This course enables students to deepen their knowledge of historical English and of historical texts by way of translation and it introduces students to ananlysing form-function relationships by way of close commentaries.	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular participation; 1 close commentary (max. 750 words) **Examination requirements:** A good knowledge of English historical linguistics and translation techniques; providing a close commentary on the relationship of form and function	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2

Maximum number of students: 30	

Additional notes and regulations:
This module especially addresses students with little knowledge in the fields of English historical linguistics and medieval English literature (cf. B.Eng.601) who choose a specialization in medieval English studies. It serves as a substitute for module M.EP.02b.

Georg-August-Universität Göttingen **Module M.EP.04a: Advanced Anglophone Literature and Culture**	6 C 4 WLH

Learning outcome, core skills: • a deeper and broader understanding of literary and cultural studies • the competence to synthesize textual analysis with theory-based guidance on a sample research problem • the competence to independently develop research questions or thesis statements and an academically sound bibliography	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture series on English literature and cultural history	2 WLH
Course: Seminar on English literature and cultural studies	2 WLH
Examination: Term Paper (max. 5500 words)	6 C

Examination requirements: • proof of skills in textual analysis combined with the theory-based investigation of an independently developed research project based on the course topic/area • solid research skills and competency in the critical handling of secondary and theoretical literature • proof of skills to independently develop research questions or thesis statements as well as a sound research bibliography • proof of skills in using style sheets and the department-specific guidelines for academic papers	

Admission requirements: none	**Recommended previous knowledge:** M.EP.01c, M.EP.14
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations:

This module is aimed in particular at students who have completed M.EP.01c and have little or no experience in writing term papers in literary studies.

Regular attendance in the course as well as independent further study of the course contents are strongly recommended. A short presentation of the project (5-10 mins or 2-3 pages) during the seminar or during a consultation hour is expected.

Georg-August-Universität Göttingen **Module M.EP.04b: Advanced North American Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: • Research-oriented, subject-specific deepening of North American Studies • Understanding of the problems of theory-based analysis of literary and cultural texts • Critical use of subject-specific and interdisciplinary methodologies • The ability to apply theoretical methodologies to literary and cultural interpretation	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: American Studies Seminar This course is designed to acquaint students with positions and questions of specific literary and cultural theories. The aim is to help students develop the competence to analyze and critique literary and non-literary texts. Moreover, they will investigate and compare different theories to develop their own research theses and discuss them in a scholarly fashion	2 WLH
Course: Independent Study: "Literary Theory" The Independent Study component of the course (60 hours), is to be devoted to a topic agreed upon with the instructor in advance. The goal is a thematically focused, theoretically and methodologically informed research project on a primary text that takes the relevant scholarship into account. Students will compose an annotated bibliography that will document their research while assessing the current state of the field. Students should acquire the ability to reflect upon their scholarly approach and to engage in a dialog with the instructor about the current stage of research in the chosen field. Through the Independent Study, students should deepen their understanding of theory and its relation to research methodology. Progress will be assessed through three meetings with the instructor throughout the semester.	
Examination: Academic paper (max. 5000 words) based on extended independent research and an annotated bibliography to be submitted beforehand. **Examination prerequisites:** For the independent study, two meetings with the instructor and the composition of an annotated bibliography (4-5 pages) on the agreed-upon topic are required.	6 C

Examination requirements: Establishing a critical approach to secondary literature; formulating a research question; conducting independent scholarly research.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	2 - 3
Maximum number of students: 60	

Additional notes and regulations:
Regular attendance in the course is strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.05a: Advanced English Linguistics**	6 C 2 WLH

Learning outcome, core skills: • The competence to verify linguistic theories and to apply argumentation strategies to a specific research project • Knowledge of alternative approaches to the core material as well as the ability to critically assess and grasp new theoretical developments	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Linguistics seminar	2 WLH
Course: Independent Study *Contents*: The goals are: a) competency in assessing scholarly research in the field, b) competence in a meaningful and correct application of linguistic theories regarding linguistic phenomena in the area of study, c) advanced knowledge of the subject, as necessary for meaningful class participation, and as is necessary to acquire if not present prior to the beginning of the course. Independent studies comprise 60 hours of the total self-study and will generally require a minimum of three meetings with the instructor during the semester. Progress will be assessed in interviews and/or through written assignments, subject to prior agreement.	
Examination: Term Paper (max. 7500 words)	

Examination requirements: Demonstration of the ability to research and absorb relevant research on a linguistics-relevant subject, to extract relevant research questions, to analyze differentiated linguistic objects, and to select and evaluate an appropriate theory.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EP.05b: Advanced Medieval English Studies 1**	6 C 2 WLH

Learning outcome, core skills: • An understanding of selected texts of medieval English literature in their linguistic and literary contexts through intensive textual study • To approach texts with a meaningful understanding of historical context, textuality and provenance • The application of selected aspects of medieval and contemporary literary theories to specific texts • The application of editing techniques with regard to modern media	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Course: Medieval Studies (Seminar)	2 WLH
Course: Independent Study *Contents*: Independent research of a topic; application of research methods, e.g., catalogues, databases, or text corpus. There will be opportunity for consultation and supervision in the seminar. Scope of the independent study: 75 hours of the entire self-study.	
Examination: Term Paper (max. 6000 words) **Examination requirements:** Familiarity with important currents of literary and cultural theory; application of theoretical knowledge on texts with a view of provenance; a confident encounter with relevant research publications, databases, and text corpora.	6 C

Admission requirements: M.EP.02b, M.EP.02c One of the modules M.EP.02b and M.EP.02c must be successfully completed.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.EP.05c: Advanced English Linguistics 2**	6 C 2 WLH

Learning outcome, core skills: • The competence to verify linguistic theories and to apply argumentation strategies to a specific research project • Knowledge of alternative approaches to the core material as well as the ability to critically assess and grasp new theoretical developments	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Linguistic seminar	2 WLH
Course: Independent Study *Contents*: The goals are: a) competency in assessing scholarly research in the field, b) competence in a meaningful and correct application of linguistic theories regarding linguistic phenomena in the area of study, c) advanced knowledge of the subject, as necessary for meaningful class participation, and as is necessary to acquire if not present prior to the beginning of the course. Independent studies comprise 60 hours of the total self-study and will generally require a minimum of three meetings with the instructor during the semester. Progress will be assessed in interviews and/or through written assignments, subject to prior agreement.	
Examination: Term Paper (max. 7500 words)	6 C

Examination requirements: Demonstration of the ability to research and absorb relevant research on a linguistics-relevant subject, to extract relevant research questions, to analyze differentiated linguistic objects, and to select and evaluate an appropriate theory.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra Dr. Hildegard Farke
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Additional notes and regulations:
The module is meant to allow students to explore a second area of linguistic expertise, in continuation of module M.EP.05a. It may also be used for the Schlüsselkompetenzbereich, viz. as an optional module outside the core curriculum.

Georg-August-Universität Göttingen **Module M.EP.05d: Advanced Medieval English Studies 2**	6 C 2 WLH

Learning outcome, core skills: • An understanding of selected texts of medieval English literature in their linguistic and literary contexts through intensive textual study • To approach texts with a meaningful understanding of historical context, textuality and provenance • The application of selected aspects of medieval and contemporary literary theories to specific texts • The application of editing techniques with regard to modern media	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Course: Medieval Studies (Seminar)	2 WLH
Course: Independent Study *Contents*: Independent research of a topic; application of research methods, e.g., catalogues, databases, or text corpus. There will be opportunity for consultation and supervision in the seminar. Scope of the independent study: 75 hours of the entire self-study.	
Examination: Term Paper (max. 6000 words) **Examination requirements:** Familiarity with important currents of literary and cultural theory; application of theoretical knowledge on texts with a view of provenance; a confident encounter with relevant research publications, databases, and text corpora.	6 C

Admission requirements: M.EP.02b, M.EP.02c One of the modules M.EP.02b and M.EP.02c must be successfully completed.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 30	

Additional notes and regulations:
The module mirrors M.EP.05b and allows students to acquire knowledge about an additional area of Medieval English Studies. The module can be used for the soft skills part of the degree programme.

Georg-August-Universität Göttingen **Module M.EP.06a: Degree Course: Anglophone Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: • Research-oriented, field-specific deepening of the subject; understanding of the problems of theoretical textual analysis (above all with literary texts) with regard to a specific sample problem • The competence of field-specific and interdisciplinary self-reflection • The competence of a synthetic use of literary and cultural studies methodology	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Colloquium	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** Regular attendance in the colloquium.	6 C

Examination requirements: • Demonstration of a fundamental knowledge of the field as well as competence of theoretical and textual analysis • An informed demonstration of an understanding of different theoretical and research approaches • A synergetic use of literary and cultural studies methodologies	

Admission requirements: M.EP.04a, M.EP.10d One of the modules M.EP.04a and M.EP.10d must be successfully completed.	**Recommended previous knowledge:** M.EP.09a
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Additional notes and regulations:
This module is aimed at students writing their MA thesis on a topic from Anglophone Literature and Culture.

Georg-August-Universität Göttingen **Module M.EP.06b: Degree Course: North American Literature and Culture**	6 C 4 WLH

Learning outcome, core skills: • Deepening of the knowledge of cultural- and literary- historical analysis of American studies through a research-oriented focus on a textual analysis of a sample research question (with the possibility of developing a master's thesis) • Application of said methodology • Review of the unity and exceptionality of the subject North American Studies and field-specific knowledge of the same (in colloquium)	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar: American Studies	2 WLH
Course: Colloquium: American Studies	2 WLH
Examination: Oral examination (approx. 30 minutes)	6 C

Examination requirements: A method-based presentation of research positions; review of the unity and exceptionality of the subject North American Studies and field-specific knowledge of the same.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 80	

Additional notes and regulations: Regular attendance is strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.07a: Degree Course: English Linguistics**	6 C 2 WLH

Learning outcome, core skills: • Deepening and specialization in an area of study • Research-oriented focus on a linguistic problem (with the possibility of developing a master's thesis) • Competence in linguistic discourse • To enable the student (with the colloquium) toward an interdisciplinary embedding and reflection upon linguistic problems and subject area within the context of specific research paradigms as well as the explication of field-specific-scholarly relevance	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Colloquium: Linguistics	2 WLH
Examination: Term Paper (max. 4000 words) **Examination prerequisites:** regualr attendance **Examination requirements:** content of paper: motivation, relevance of the topic, main debates, outline, preliminary references etc.	6 C

Examination requirements: Demonstration of interdisciplinary embedding and reflection upon linguistic problems and subject area within the context of specific research paradigms as well as the explication of field-specific-scholarly relevance.	

Admission requirements: M.EP.05a, M.EP.05c, M.EP.09c Successful completion of M.EP.05a/05c OR M.EP.09c.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EP.07b: Degree Course: Medieval English Studies**	6 C 2 WLH

Learning outcome, core skills: After successful completion, students will be able to: • Present their own research using appropriate forms of presentation • Demonstrate test-oriented, comprehensive knowledge of English Medieval Studies • Lead academic dialogue with graduates and formulate research questions independently • Undertake in-depth analysis of the latest literature	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Independent Study *Contents*: Independent work on a research topic; Practice of research techniques, for example, with catalogs, databases or corpora. There will be opportunity for consultation and supervision in the colloquium. Scope of the Independent Study: 75 hours of total self-study	

Course: Colloquium *Contents*: • Exposure to current research topics in dialogue with graduates • Presentation and evaluation of independent research work • Exam Preparation / repeat	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** Regular participation; 1 research presentation (30-45 mins) **Examination requirements:** Sound knowledge in several areas of English Medieval Studies; critical analysis of current issues in teaching and research on the English Middle Ages.	6 C

Admission requirements: M.EP.05b	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.EP.08a: American Culture and Institutions / British Culture and Institutions (for MA Students)**	6 C 2 WLH

Learning outcome, core skills: • Training of advanced cultural and intercultural skills • Comparison of various Anglophone / North American cultural areas, as well as cultural practices amongst each other • Autonomous development of in-depth knowledge in the field of regional history and specific culture-bound practices	**Workload:** Attendance time: 28 h Self-study time: 152 h

Special examination regulations: Prüfungsleistung wird vor Kursbeginn im Vorlesungskommentar/UniVZ bekannt gegeben	

Course: Advanced American Area Studies / American Culture and Institutions or Advanced British Area Studies /British Culture and Institutions	2 WLH
Course: Independent Study *Contents*: As part of the Independent Study which comprises 75 hours of the total self-study students deepen and broaden their skills in cultural studies by reflecting on some of the course content whilst carrying out various tasks. This is done, for example, by students designing a game that helps learners to better understand aspects of British culture and to have fun at the same time; by creating an annotated bibliography of books, which, although on the course book list, cannot be dealt with in depth due to lack of time during the course; by writing an essay or a 'survival guide', a poem, etc. on an aspect of the course, in which the main focus should be placed on how students would react to selected situations in Great Britain. At the end of the course, students submit appropriate work. There will be opportunity for consultation and supervision in the seminar.	

Exactly one of the following examinations must be successfully completed:	
Examination: Essay (max. 3000 words) **Examination prerequisites:** Regelmäßige aktive Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen	6 C
Examination: Written examination (90 minutes) **Examination prerequisites:** Regelmäßige aktive Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen	6 C
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regelmäßige aktive Teilnahme mit nicht mehr als zwei entschuldigten Fehlsitzungen	6 C

Examination requirements: Sound knowledge of the culture, history and specific culture-bound practices of the country and the ability to compare different Anglophone / North American culture areas.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EP.09a: Research Course: Anglophone Literature and Culture**	12 C 2 WLH

Learning outcome, core skills: • Ability to create a synopsis of the text-analytical, practical and theoretical parameters of the discipline by using the theory-based investigation of a research problem selected by the students themselves. • Strengthening of the student's academic autonomy through guided research, bibliography and critical analysis of research approaches. • Discussion and analysis of literary / cultural theory approaches to ascertain their applicability to a specific topic. • Developing autonomy in terms of research and critical assessment of secondary literature through feedback sessions and regular discussions to present the chosen research area.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Colloquium (Colloquium) In the colloquium students get an insight into the methodology and approaches of other students. They deepen their knowledge about how theories and methodologies can be used by discussing and reflecting on what others do, and they hone their analytical skills in discussing the state of research with respect to other projects.	2 WLH
Examination: Brief talk or poster presentation, not graded **Examination requirements:** research-oriented presentation of plans for a Master's thesis in the form of a short presentation or a poster	3 C

Course: Independent Study *Contents*: For the Independent Study part comprising 332 self-study hours, a thematically focused research topic is developed in theoretical and methods-based self-study.This project is the basis for the Master's thesis. In addition, relevant research methods are practiced, primary and secondary texts compiled and research theses drawn up which will be discussed with the supervisor. Students develop the ability to work independently and in a scientifically research-oriented manner and reflect critically on their own approaches. In the Independent Study parts, students develop their methodological skills and their appreciation of theory. Instruction, feedback and review of progress take place in several meetings over the lecture period.	
Examination: Portfolio (max. 5000 words), not graded **Examination requirements:** • Methodologically-sound and critical account of theories and research positions • Reliable research skills and critical approach to the research literature. The work put into the portfolio may include, but is not limited to, a presentation of a research project and / or a critical outline of the literature on a research project.	9 C

The portfolio can include, among other things, the presentation of a research project and/or a critical outline of the literature on a research project.	

Admission requirements: M.EP.04a, M.EP.10d One of the modules M.EP.04a and M.EP.10d must be successfully completed. Proof of an obligatory counselling meeting according to § 6 (4) of the regulations.	**Recommended previous knowledge:** M.EP.01a
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations:
This module is exclusively designed to help students conceptualize and prepare a research project that leads into a draft master's thesis. Students should have already contracted a supervisor for their thesis.

Regular attendance is strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.09b: Research Course: North American Literature and Culture**	6 C 2 WLH

Learning outcome, core skills: • Deepening and consolidation of the literary knowledge obtained during the Bachelor's program in the area of North American Studies • Ability to create a synopsis of the text-analytical, practical and systematic-theoretical parameters of the discipline by using a theory-based investigation of a research problem selected by the students themselves. • Deepening of academic autonomy through guided research, bibliography and critical analysis of research approaches. Main contents: • Advanced text-analytical skills • Intensive critical examination of a range of literary / cultural, or theoretical positions • Self-critical observation of one's own approaches, techniques and analysis results • Enhancement of independence in terms of research and critical assessment of the secondary literature through feedback sessions and in regular meetings in oder to present the chosen research area	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Research and research-focused course for 2 hours per week on North American culture and literature	2 WLH
Course: Independent Study *Contents*: For the Independent Study component, which comprises 75 hours of the total self-study part, a topic in the field of North American Studies previously agreed with a teacher will be worked on independently. The learning objective is a thematically focused, theory and methods-based self-study for which relevant primary and secondary texts are researched in technically relevant scientific databases and publications, and research theses designed. Students learn to develop the ability to critically reflect on their own approaches, to substantiate them in academic dialogue with the teacher on the basis of thesis papers and to define their place in a professional context. In the Independent Study parts of the North American Studies modules, students extend their methodological skills and appreciation of theory. They build up their ability to work independently and in a scientifically research-oriented fashion. Instruction, feedback and review of progress take place in at least two meetings distributed over the lecture period.	
Examination: Term paper or research report (max. 7500 words) **Examination prerequisites:** Short presentation of a research project (approx. 30 mins). **Examination requirements:** Demonstration of ability to comprehensively research the literature; critical approach to secondary literature; ability to formulate own research theses; ability to work independently and scientifically.	6 C

Admission requirements:	**Recommended previous knowledge:**

M.EP.01b The proof of the obligatory advisement according to § 6 (4) of the the regulations.	M.EP.04b
Language: English	**Person responsible for module:** Prof. Dr. Babette B. Tischleder
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 20	

Additional notes and regulations:
Regular attendance in the course is strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.09c: Research Course: English Linguistics**	12 C 4 WLH

Learning outcome, core skills: • Deepening and consolidation of linguistic knowledge attained during the Bachelor's degree in the area of Modern English. • Ability to create a synopsis of the text-analytical, practical and systematic-theoretical parameters of the discipline by using a theory-based investigation of a research problem selected by the students themselves. • Deepening of academic autonomy through guided research, bibliography and critical analysis of research approaches. • Competence in carrying out an intense critical analysis of various linguistic positions.	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Research-oriented Course	2 WLH
Examination: Term Paper (max. 7500 words) **Examination prerequisites:** research report (max. 5000 words)	

Course: Linguistic Colloquium *Contents*: The qualification aim of this part of the module is the acquisition of skills in extrapolation of subject-specific and theoretical positions from the research literature, as well as presentations on current issues and research topics in linguistics. These should be commented and reflected on, and classified in a research outline.	2 WLH
Examination: Research report (max. 1500 words), not graded	

Examination requirements: Students must demonstrate that they can deal with methods and modes of practice in linguistic research in a generic area under guidance that they can independently evaluate analysis results and evaluate these critically. They must demonstrate that they can research the relevant literature independently and can critically assess the secondary literature. They must demonstrate that they can present their chosen field of research.	

Admission requirements: none	**Recommended previous knowledge:** Students should have successfully completed M.EP.05a.
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students:	

20	

Georg-August-Universität Göttingen **Module M.EP.09e: Research Course: English Linguistics - Peer-to-Peer Assistantship**	12 C 2 WLH

Learning outcome, core skills: • Deepening and consolidation of linguistic knowledge attained during the Bachelor's degree in the area of Modern English. • Ability to create a synopsis of the text-analytical, practical and systematic-theoretical parameters of the discipline by using a theory-based investigation of a research problem selected by the students themselves. • Deepening the academic engagement with the linguistic subject matter through the principle of "learning by teaching", i.e. advanced students repeat basic concepts and formal knowledge by imparting them to other students who are not familiar or confident with them through peer-to-peer assistantship. The ability to engage in critical debate is supported and practised through the 1-1 relation on the one hand, and the independence of argumentation is deepened on the other.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Advanced / Research-focused course *Contents*: The qualification aim of this part of the module is the acquisition of skills in extrapolation of subject-specific and theoretical positions from the research literature, as well as presentations on current issues and research topics in linguistics. These should be commented and reflected on, and classified in a research outline.	2 WLH
Examination: Term Paper (max. 7500 words) **Examination prerequisites:** research report (max. 5000 words)	6 C

Course: Peer-to-peer meeting *Contents*: Students perform a support for peer students with a different linguistic background. They are expected to tutor one or two students to enable them to attend an advanced linguistic course esp. with reference to theoretical and/or formal concepts required for successful completion. The peer company is established and supervised by the instructor. Peer meetings should be on a weekly basis to follow the course's progression.	2 WLH
Examination: Portfolio (max. 3500 words), not graded	6 C

Examination requirements: 1. The students prove that they can deal with methods and working practices of linguistic research, that they can independently research the relevant literature and critically assess the secondary literature. 2. Proof of at least 8 meetings with the mentees conducted at regular intervals, documentation of the concepts and skills developed, reflection on the learning progress as well as evaluation of the peer-to-peer assistance.	

Admission requirements:	**Recommended previous knowledge:**

by individual call / address by instructor	advanced linguistic course and term paper
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EP.10a: Historical Aspects of Anglophone Literature and Culture**	6 C 4 WLH

Learning outcome, core skills: • Deepening of general knowledge of Anglophone literary history from the Renaissance to the present day (main focus: general overview and critical reflection thereupon) • Subject / structure-based independent analytical and comparative treatment of core texts of Anglophone literary history	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lecture on Anglophone literature (Lecture)	2 WLH
Course: Tutorial or Independent Study *Contents*: For the Independent Study part, which comprises 60 hours of the total self-study component, a thematically focused research subject agreed with the teacher of the accompanying course will be worked on in theoretical and methods-based self-study. In addition, relevant research methods are practiced; primary and secondary texts studied and research theses drawn up in academic dialogue with the teacher. Students develop the ability to work independently in a scientifically research-oriented manner, and thereby to reflect on their own approaches critically. In the Independent Study parts, students develop their methodological skills and their appreciation of theory. Instruction, feedback and review of progress are offered in office hours.	2 WLH
Examination: 2 Reading Logs to reflect on primary and secondary literature (up to a maximum of 5000 words)	6 C

Examination requirements: • Proof of sound general knowledge of literature and cultural history • Demonstration of the ability to critically reflect on methodology	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EP.10b: Anglophone Literature in Focus**	6 C 2 WLH

Learning outcome, core skills: • autonomous analytical and comparative study of core texts in Anglophone literary history and its academic representation, treatment and reception • deepening of analytical and presentation skills in the field of Anglophone literary history from the Renaissance to the present day (main focus: general knowledge / cross-linking of texts)	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar on History of Anglophone Literature (Seminar)	2 WLH
Course: Independent Study *Contents*: For the Independent Study part, which comprises 75 hours of the total self-study component, a thematically focused research topic is agreed with the instructor of the accompanying class. This topic is developed through theoretical and methods-based self-study. In addition, relevant research methods are practiced, primary and secondary texts compiled and research theses drawn up. Assistance is given in max. two meetings with the instructor. Students develop the ability to work independently and in a research-oriented manner. They reflect critically on their own approaches. Through Independent Study, students develop their methodological skills and their appreciation of theory.	
Examination: Presentation (approx. 15 min.) with write-up (max. 4000 words); alternatively poster presentation (approx. 15 min.)	6 C

Examination requirements: • proof of general knowledge overview of literary history and historical reception, as well as of theory-led, text-analytical competencies • methodologically sound presentation of theories and research positions • ability to critically compare core texts of different eras	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Additional notes and regulations:
Regular attendance in the course as well as independent further study of the course contents are strongly recommended. At least one meeting with a teacher is expected for the Independent Study part.

Georg-August-Universität Göttingen **Module M.EP.10c: Anglophone Literature(s) - Developments and Contrasts**	12 C 4 WLH

Learning outcome, core skills: • deepening of general knowledge of Anglophone literary history from the Renaissance to the present day (main focus: general overview and critical reflection thereupon) • autonomous critical and comparative analysis of core texts of various eras taking into account the current literature and historical research-related reception	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Class (e.g. lecture) on Anglophone literary history	2 WLH
Course: Class (e.g. lecture, reading seminar)	2 WLH
Course: Independent Study *Contents*: In the Independent Study part (135 hours of the total self-study component), the themes and texts dealt with in class is deepened in theory and methods-based self-study. Literary and cultural critical skills are improved. In addition, relevant research methods are practiced; primary and secondary texts studied and research theses developed, either during class or in max. two meetings with the instructor during office hours. Students improve their ability to work independently in a research-oriented manner, and thereby to critically reflect on their own approaches. In the Independent Study parts, students develop their methodological skills and their understanding of theory.	
Examination: Oral examination (approx. 30 minutes)	12 C

Examination requirements: Students present a thesis paper on both courses on both courses or on the basis of a reading list for both courses. They provide evidence of their knowledge of overview knowledge on the history of literary and cultural developments as well as reception aspects. They can present methodologically sound theories and research positions and can recognise, outline and critically reflect on lines of development within individual periods.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Additional notes and regulations:

Regular attendance in the lectures or courses as well as independent further study of the lecture/course contents are strongly recommended.

Georg-August-Universität Göttingen **Module M.EP.10d: Topics in Anglophone Literature**	6 C 2 WLH

Learning outcome, core skills: • autonomous analytical and comparative study of core texts in Anglophone literary history and its scientific representation, treatment and reception • deepening of research-oriented analysis expertise in a group themes related to Anglophone literary history	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Course on History of Anglophone Literature In addition to concentrating on the course contents the self-study part of the module also includes further in-depth reading and the preparation of contexts and further secondary literature independently, e.g. based on a detailed reading list.	2 WLH
Examination: Term Paper (max. 7500 words)	6 C

Examination requirements: • proof of sound scientific knowledge of literature • proof of sound independent text-analytical skills • demonstration of ability to independently reflect on research positions • sound research skills and critical approach to the research literature • proof of skills to independently develop research questions or thesis statements as well as a sound research bibliography • proof of skill in using style sheets and the department-specific guidelines for academic papers	

Admission requirements: none	**Recommended previous knowledge:** M.EP.14
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Additional notes and regulations:
Regular attendance in the course as well as independent further study of the course contents are strongly recommended. A short presentation of the project (5-10 mins or 2-3 pages) during the seminar or during a consultation hour is expected.

Georg-August-Universität Göttingen **Module M.EP.10g: Non-European Backgrounds**	6 C 2 WLH

Learning outcome, core skills: Students have a basic knowledge of the historical, political and social background of a region in which Anglophone literature is produced and received (e.g., India, South Africa, Australia, New Zealand). They know key aspects of the development of economic and social structures. They have enough basic theoretical knowledge to grasp and describe the developments in each case. They know key events and can explain their significance in wider contexts. They know sources for research on additional literature, and possess the appropriate skills to deal with them.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Course	2 WLH
Course: Independent Study or practice *Contents*: For the Independent Study part, which comprises 75 hours of the total self-study component, a thematically focused research topic will be agreed with the teacher of the accompanying class and be developed in theoretical and methods-based self-study. In addition, relevant research methods are practiced, primary and secondary texts compiled and research theses drawn up to be discussed with the teacher in academic dialogue. Students develop the ability to work independently and in a scientifically research-oriented manner and thereby reflect critically on their own approaches. In the Independent Study parts, students develop their methodological skills and their appreciation of theory. Instruction, feedback and review of progress take place in at least three meetings distributed over the lecture period.	
Examination: Written examination (90 min.) or term paper (max. 5000 words) **Examination prerequisites:** At least one meeting with a teacher are a prerequisite for the Independent Study part. **Examination requirements:** Basic knowledge of the specific historical, political and societal idiosyncrasies of a region producing Anglophone literature (depending on the chosen course); general knowledge of events and developments that particularly characterize the respective society / history of this region; ability to contextualize this knowledge.	6 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of the anglophone authors as well of the English texts from the non-European cultural areas is recommended.
Language: English, German	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Maximum number of students: not limited	

Additional notes and regulations:
This module is intended to provide students who have a focus of interest in the field of post-colonial literature with background knowledge on the respective region. If credits are required for external work (e.g. courses at other universities, or summer school courses), graded certificates must be provided as evidence.

Georg-August-Universität Göttingen **Module M.EP.10h: Periods in English Literary History**	6 C

Learning outcome, core skills: After the successful completion of this module, • students have firm knowledge of two periods of Anglophone literary and cultural history and their central developments; • they know the most important canonic authors of two periods of Anglophone literary and cultural history, can locate them within the period and can name their key works; • students know the major canonic texts of the three big genres (novel, drama, poetry) of Anglophone literary and cultural history, can locate them within the period and can connect them to authors; • students know the crucial social developments of two of the periods in Anglophone literary and cultural history in its basics and know about approximate important dates; • students are able to roughly define periods of Anglophone literary and cultural history and can contrast them against each other and successfully justify their answers.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Self-Study Unit Periods in English Literary History () *Course frequency:* once a year	
Examination: Written examination (90 minutes) **Examination requirements:** The part-tests are timed differently: 2x 14mins (closed questions); 2x 18mins (closed and open questions); 1x 26mins (short essay), in total 90 mins. The exam is about overviews of two periods of Anglophone literary and cultural history based on the independent study of two to three literary histories. Students prove: • knowledge of periods and their margins including reasons for structuralizing periods; • naming of periods' key authors and works (knowledge of canon); • knowledge of main social and literary-cultural development. Periods covered: Early Modern Period; the 'Long' Eighteenth Century; Victorian Period; Twentieth-Century Literature; Contemporary Literature	6 C

Admission requirements: none	**Recommended previous knowledge:** M.EP.01a
Language: English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: 1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Maximum number of students: 25	

Additional notes and regulations:
Students who have completed the parallel module in their BA degree programme (B.EP.203a/B.Eng.305/ B.Eng.306.SL, depending on their study regulation) cannot choose this module.

Georg-August-Universität Göttingen **Module M.EP.11: The Medieval Text in Manuscript, Archive and Media**	12 C 4 WLH

Learning outcome, core skills: After successful completion, students will be able to: • Reliably read, transcribe and date medieval texts from England • Understand fundamental aspects of the study of books in the context of literary scientific theories; and apply edition methods • Describe original medieval manuscripts and understand methods of their cataloging, digitization, preservation and restoration • Practice medial presentation in print media, exhibitions and on the Internet • Become familiar with practical work contexts in archives on excursions	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Medieval studies (Seminar) *Contents*: Practicing making facsimiles; securing of precise textual knowledge	2 WLH
Course: Independent Study *Contents*: Independent work on a research topic; Practice of research techniques, e.g. with catalogs, databases or corpora. There will be opportunity for consultation and supervision in the seminar. Scope of the Independent Study part: 280 hours of the total self-study period.	
Examination: academic paper (max. 7500 words) or end-of-term exam (60 mins) **Examination prerequisites:** Regular participation; Excursion preparation; adopting a manuscript; presentation (max. 45 mins) **Examination requirements:** Term paper: familiarity with important literary and cultural theory trends; application of theoretical knowledge of the text including a look at its tradition history; working confidently with the relevant research literature, databases and scientific corpora; presentation: good use of relevant presentation techniques; ability to present complex information clearly End-of-term exam: Good knowledge in the history of Latin scripts (especially book hands), with an emphasis on Late Antiquity and the Early Middle Ages; reliable reading of medieval manuscript texts, dating and localization of text witnesses according to palaeographic and codicological aspects.	6 C

Course: Excursion *Contents*: • Excursion to a European manuscript library • Transcription exercises on real substantive text • Practice of identifying text and edition • Learning archiving techniques • Medial presentation in team	2 WLH

Course frequency: each winter semester	
Examination: Excursion report (max. 2000 words) **Examination prerequisites:** Regular participation; presentation (max. 45 mins) **Examination requirements:** Summary of excursion results using diverse media.	6 C

Admission requirements: M.EP.05b	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Rudolf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Note that students should have successfully completed M.EP.05a before registering for the excursion.

Georg-August-Universität Göttingen **Module M.EP.11a: Investigating Language: Tools and Skills**	12 C 4 WLH

Learning outcome, core skills: Acquisition of practical methods for investigating English and its historical stages, namely: • Competency to work with current and historical corpora • Skills for empirical data collection (children / adults) • Skills for discursive development of linguistic structures • Competences for the development of historical vocabularies and holdings • Skills for historical comparative linguistics	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Various Tools and Skills: Advanced Course on Formal Linguistic Theories	2 WLH
Examination: Examination-like term paper or term paper (max. 4000 words)	6 C

Course: Various Tools and Skills: Advanced Course on Topics on General Linguistics *Contents*: Two courses must be taken from the following option subject areas: • Seminar / lecture in Statistics / Logic • Seminar in the field of Psycholinguistics / Corpus Linguistics • Seminar in the field of Paleography • Seminar in Latin Philology / Old German Studies / Old Romance Studies / Old Scandinavian Studies As an alternative to one of these classes, a tutorial may be offered that accompanies an introductory undergraduate seminar in Medieval Studies or Linguistics.	2 WLH
Examination: Written examination (90 min.) or examination-like term paper or term paper (max. 4000 words)	6 C

Examination requirements: • Appropriate use of practical methods for determining and analyzing data relating to English • Review of the adequacy of an analytical method for a given issue • Presentation of methods and results	

Admission requirements: M.EP.020, M.EP.021, M.EP.02b, M.EP.02c	**Recommended previous knowledge:** M.EP.022
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra Prof. Dr. Winfried Rudolf; Dr. Hildegard Farke
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	2 - 3
Maximum number of students: 25	

Additional notes and regulations:
In order to take the module, successful completion of either of the basic modules in Linguistics (M.EP.020/ M.EP.021), **or** the basic Medieval Studies module (M.EP.02b/M.EP.02c) is required.

Georg-August-Universität Göttingen **Module M.EP.12a: Forms of Literary Reception**	6 C 1 WLH

Learning outcome, core skills: Students acquire an overview of the concepts and strategies of mass communication and audience engagement/loyalty as well as branding and marketing, taking features of literary/cultural mediation specifically under consideration. In the practical part of the module, they examine how moderators, authors, festival directors deal with these strategies, particularly with regard to communication in a literary festival to different target groups.	**Workload:** Attendance time: 14 h Self-study time: 166 h

Course: Course/workshops/self-study unit on audience engagement, branding and marketing in literary/cultural contexts *Contents*: Concepts of audience loyalty and audience engagement; strategies of marketing in the literary/cultural sector; author or publisher branding; theories on the literary field, if applicable; social networking concepts, or using social networks, if applicable; special features of implementation in social networks compared to offline advertising and audience-targeting offers The exam prerequisite (brief project outline, see below) is based on the contents of this course. This aims at helping them to develop questions for the practical part of the module. Students register for the participation/.Tn part of the module in this course.	1 WLH

Course: OPTIONAL: Course/workshops/self-study unit on participatory observation *Contents*: concepts of participant observation; approach to data collection and evaluation; considerations on learning objectives in the context of projects; project planning The exam prerequisite (brief project outline, see below) may also be based on the contents of this course, as far as the actual observation process is concerned.	WLH

Course: Observation project *Contents*: attendance at three author readings or interviews with authors/content creators at a literary festival (also online); engagement with information on that festival in various media (e.g. online advertising, posters, information brochures, programme flyers, ...)	
Examination: Portfolio (max. 3000 words), not graded **Examination prerequisites:** brief project outline on the intended focus of investigation (e.g. combination of advertising and actual reading; behaviour of stakeholders; support and promotion of festivals through websites; ...) with specific reference to underlying theories or concepts according to the attended course/self-study unit (max. 500 words) **Examination requirements:** brief description of the readings/interviews with reference to mediation strategies; analysis of engagement strategies, critical reflection taking into account the theoretical	6 C

knowledge acquired in the course/self-study unit (e.g. on forms of communication, evoking reactions, strategies of audience engagement, classification of author/text in a literary field; ...)	

Admission requirements: none	**Recommended previous knowledge:** M.EP.12
Language: English, German	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Additional notes and regulations:
The module cannot be taken if B.Eng.812 has already been completed.

Georg-August-Universität Göttingen **Module M.EP.12b: Perspectives on the Literature and Culture Industries**	12 C 1 WLH

Learning outcome, core skills: Students deepen their knowledge about the approach to different areas of the literary and cultural industry. They reflect the specific approaches of the literary and cultural industry for non-scientific recipients. They acquire an overview of which texts and authors are absorbed by society. They improve their understanding of what target groups literary events aim at and learn to critically reflect on those events. In cooperation with the host institution, an internship may be utilized for a research-based master thesis.	**Workload:** Attendance time: 14 h Self-study time: 346 h

Course: Course/workshops/self-study unit on participatory observation *Contents*: concepts of participant observation; approach to data collection and evaluation; considerations of learning objectives; project planning The purpose of the course/self-study unit is to support students in planning their internship. Before the practical starts, students are expected to provide a brief outline of an internship project (approx. 500 words) consisting of the students' expectations of the internship and the approaches to participant observation acquired in the course/self-study unit (exam prerequisite). This aims at helping them to develop questions for the practical part of the module.	1 WLH

Course: Internship in the literature or culture industry (240 hours, in Germany or abroad) *Contents*: (e.g. in a publishing house; at the Literaturhaus, Literaturherbst or similar institutions; at the Göttingen Handel Festival; at a corresponding literary establishment or festival outside Göttingen; in a museum that does not necessarily have a literary focus; in cultural management at a cultural organization; in theater or drama; ...) Students can go abroad for their internship. After consulting with the module coordinator the internship can also be split.	
Examination: Internship report (max. 4000 words), not graded **Examination prerequisites:** brief outline of an internship project (approx. 500 words) consisting of the students' expectations of the internship and the approaches to participant observation acquired in the course/self-study unit; to be handed in before the start of the internship **Examination requirements:** The internship report helps students to systematically document and reflect upon their internship experiences, and allows them to show that they know the specific challenges of the literature and culture industry, especially with regard to authors and publishing houses. Secondly, it allows them to show that they can critically reflect upon the realisation of the different formats, which they encounter. Furthermore, they show their	12 C

ability to adapt to the typical and untypical situations of the literature and culture industry and present their copying strategies, which they have developed for these situations.

Contents of the internship report include:

• documentation of the internship: Students describe the most important experiences and situations of their internship.

• reflections of the practical insights gained In the second part of the internship report students analyse and reflect upon their new findings and experiences.

• internship certificate

In addition, they critically reflect on and evaluate their findings with regard to their distinct role during their internship, as well as their studies, the literature and culture industry and their later potential field of work.

Admission requirements: none	**Recommended previous knowledge:** M.EP.12
Language: English, German	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: winter or summer semester, on demand	**Duration:** 1-2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Additional notes and regulations:

Note on module exclusion: M.EP.12b is intended exclusively for internships in the literature and culture industries. Only one module (M.EP.12b or M.EP.18) can be taken.

The module be taken even if B.Eng.813 or SK.WLI.100 has already been completed in a previous degree programme. In this case, the internship must be in a different area of the literature and culture industries, though.

Georg-August-Universität Göttingen **Module M.EP.12e: Literary Heritage, Literary Museums, Literary Tourism**	6 C 1 WLH

Learning outcome, core skills: Students acquire an overview of concepts of cultural/literary heritage, cultural/ literary museums as well as literary/cultural tourism. They gain an insight into the communication strategies for cultural/literary institutions towards different target groups and gain an understanding of the challenges involved. In the practical part of the module, they examine how to deal with these challenges, particularly with regard to communicating culture/literature to different target groups.	**Workload:** Attendance time: 14 h Self-study time: 166 h

Course: Course/workshops/self-study unit on cultural and literary heritage, museums and literary tourism *Contents*: concepts of cultural and literary heritage; exhibitability of cultural/literary heritage; concepts of (literary) museums and tourism and (cultural/literary) marketing On the basis of the information and concepts conveyed in the course/self-study unit, students write a short project outline on the intended object of investigation (e.g. combination of advertising and actual exhibition; accompanying literary city tours through websites; ...) as a preliminary examination assignment (max. 500 words). This aims at helping them to develop questions for the practical part of the module.	1 WLH

Course: OPTIONAL: Course/workshops/self-study unit on participant observation *Contents*: concepts of participant observation; approach to data collection and evaluation; considerations on learning objectives in the context of projects; project planning Concepts of participant observation should be incorporated into the preliminary examination (project outline, see above).	

Course: Observation Project *Contents*: Visit two museums or exhibitions on cultural or literary heritage; alternatively attend two guided tours/tours on cultural or literary heritage; engagement with and critical review of the accompanying information offered in various media (e.g. online advertising, posters, information brochures, programme flyers, ...)	
Examination: Portfolio (max. 3000 words), not graded **Examination prerequisites:** short project outline on the intended object of investigation (e.g. combination of advertising and actual exhibition; accompanying literary city tours through websites; ...) as a preliminary examination assignment (max. 500 words) **Examination requirements:** brief description of the museums/exhibitions/tours; analysis of mediation strategies, critical reflection taking into account the theoretical knowledge acquired in the course/ self-study unit	6 C

Admission requirements: none	**Recommended previous knowledge:** M.EP.12
Language: German	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: winter or summer semester, on demand1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations:
The module cannot be taken if B.Eng.816 has already been completed.

Georg-August-Universität Göttingen **Module M.EP.12f: Introduction to Book Studies**	6 C 1 WLH

Learning outcome, core skills: Students acquire an overview of the central areas, objects of investigation and research questions of book studies with a focus on the Anglo-Saxon area. They acquire basic sociological theories on print media and their digital variants in society. They practise dealing with theories with regard to central objects of investigation by planning, researching and evaluating smaller topic-related projects themselves.	**Workload:** Attendance time: 14 h Self-study time: 166 h

Course: Course/workshop/self-study unit on book studies *Contents*: Introduction to basic areas, topics and research questions in book studies; introduction to basic sociological theories on books in society, also on books as cultural heritage. The preliminary examination (short portfolio entries, see below) is based on these concepts and ideas. This should help to develop the theoretical foundations for the practical part of the module.	1 WLH

Course: (optional) Course or self-study unit on participant observation *Contents*: Concepts of participant observation; approaches to data collection and evaluation; considerations on learning objectives; project planning	

Course: Practical: Book Studies Mini Projects *Contents*: Smaller, theory-based studies on individual topics from book studies in the Anglophone area	
Examination: written paper (max. 3500 words) or poster presentation (max. 15mins), not graded **Examination prerequisites:** portfolio entries (max. 500 words) **Examination requirements:** Proof of having acquired basic knowledge of theories of the book in society; proof of the ability to plan, describe and carry out small book studies projects based on theory (e.g. examination of library holdings for provenance; examination of data on the readership of romances in the last five years; description of bibliographic data according to various classification systems together with a critical evaluation); alternatively, a larger project can be presented by means of a poster with explanatory short texts.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Frauke Reitemeier
Course frequency: winter or summer semester, on demand	**Duration:**

Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations:
The module cannot be taken if B.Eng.817 has already been completed.

Georg-August-Universität Göttingen **Module M.EP.15b: American Culture and Institutions / British Culture and Institutions (for MA Students)**	6 C 2 WLH

Learning outcome, core skills: • Training of advanced cultural and intercultural skills • Comparison of various Anglophone / North American cultural areas, as well as cultural practices amongst each other • Autonomous development of in-depth knowledge in the field of regional history and specific culture-bound practices	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Advanced American Area Studies / American Culture and Institutions or Advanced British Area Studies /British Culture and Institutions	2 WLH
Course: Independent Study *Contents*: As part of the Independent Study which comprises 75 hours of the total self-study students deepen and broaden their skills in cultural studies by reflecting on some of the course content whilst carrying out various tasks. This is done, for example, by students designing a game that helps learners to better understand aspects of British culture and to have fun at the same time; by creating an annotated bibliography of books, which, although on the course book list, cannot be dealt with in depth due to lack of time during the course; by writing an essay or a 'survival guide', a poem, etc. on an aspect of the course, in which the main focus should be placed on how students would react to selected situations in Great Britain. At the end of the course, students submit appropriate work. There will be opportunity for consultation and supervision in the seminar.	
Examination: Written Exam (90 Min.) or Essay (about 3000 words) or Presentation with the additional Discussion (about 30 Min.) [The mode of the examination will be set at the beginning of the course in UniVZ] **Examination prerequisites:** Regular participation with no more than two excused classes missed.	6 C

Examination requirements: Sound knowledge of the culture, history and specific culture-bound practices of the country and the ability to compare different Anglophone / North American culture areas.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.EuCu.11: Political Construction of Europe**	6 C 2 WLH

Learning outcome, core skills: This module is meant for students to acquire a thorough understanding of the European integration process, the institutions of the European Union (EU), and the challenges the EU faces (e.g. the governance of its pluralistic society, and its positioning amidst rapid societal and technological transformations). Students acquire and a specialised knowledge and critical understanding of diverse theoretical, analytical and methodological approaches relevant to studying EU polity, politics, and policies. They gain the ability to differentiate and select theoretical approaches of political science to identify and formulate an academic problem of EU governance. They can critically analyze and apply information from a diverse range of academic sources and empirical material, synthesize this information to find answers to the academic problem they have identified, and address key challenges facing the EU.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: "Political Construction of Europe" (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages)	6 C

Examination requirements: The students demonstrate: • Specialised knowledge of theories of EU governance • Intensive text comprehension • The ability to formulate academic problems, critically analyze information from various sources, and synthesize this information to address the academic problem they have formulated.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EuCu.13: Cultural Construction of Social Order**	5 C 2 WLH

Learning outcome, core skills: Students acquire and demonstrate a thorough knowledge of interdisciplinary, theoretical approaches to the complex of identity-belonging-participation. They will develop an understanding of the relevance of culture in social and political contexts. Students will be able to identify and analyze key concepts and approaches from different perspectives. This will be done also in international and interdisciplinary exchanges with their peers. Students will be able to apply theoretical concepts and approaches to concrete examples and case studies, demonstrating their ability to think critically and analytically about cultural dynamics. Upon completion of the course, students will be equipped with a set of concepts and approaches for their further studies.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: "Cultural Construction of Social Order" (Seminar)	2 WLH
Examination: Four Reading Logs (max. 3 pages each)	5 C

Examination requirements: • Students acquire and demonstrate a thorough knowledge of interdisciplinary, theoretical approaches to the relevance of culture in social and political contexts • They are able to analyse and critically engage with theoretical texts	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EuCu.23: Research Seminar: Europe in a Global Context**	10 C 4 WLH

Learning outcome, core skills: The students learn to reflect critically on recent debates in European Studies from a transnational perspective. They acquire the competence to discuss relevant historical and political issues critically and identify core controversies. The course scrutinizes Europe's role in the world from different theoretical and methodical perspectives. The students analyse and evaluate from different disciplinary and conceptual perspectives such as governance, transregional relations with a special focus on transatlantic relations, postcolonial constellations, and ways of dealing with what has been described as ‘polycrisis’. Methods of the participating disciplines are used in order to discuss, analyse and evaluate Europe's role and position in a research oriented and scientific context.	**Workload:** Attendance time: 56 h Self-study time: 244 h

Course: "Europe in a Global Context I" (Seminar) *Course frequency:* each summer semester	2 WLH
Course: "Europe in a Global Context II" (Seminar) *Course frequency:* each summer semester	2 WLH
Examination: Term Paper (max. 20 pages)	10 C

Examination requirements: Students learn to: • Critically analyse and synthesise complex information from diverse sources to address key sociopolitical, cultural, and global challenges related to Europe. • Identify, formulate, and investigate scholarly questions using interdisciplinary theoretical frameworks and advanced research methods, with attention to Europe’s evolving role in a global context.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EuCu.23a (AS): Research Seminar: Transatlantic Relations**	5 C 2 WLH

Learning outcome, core skills: The students learn to reflect critically on recent debates in European Studies from a transnational perspective. they acquire the competence to discuss relevant historical and political issues critically and identify core controversies. The course scrutinizes Europe's role in the world from different theoretical and methodical perspectives. The students analyse and evaluate it in various historical contexts (such as transregional relations with a special focus on transatlantic relations, postcolonial constellations, globalisation). Methods of the participating disciplines are used in order to discuss, analyse and evaluate Europe's role and position in a research oriented and scientific context.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: "Transatlantic Relations" (Seminar)	2 WLH
Examination: Term Paper (max. 12 pages)	5 C

Examination requirements: • Understanding of and reflection upon Europe's role in a transregional or global context • Ability to discuss and apply the respective disciplines' methods and means.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module M.EuCu.27: Researching European Politics, Society and Culture**	10 C 4 WLH

Learning outcome, core skills: The students learn to reflect critically on recent debates in European Studies. They acquire the competence to discuss relevant historical and political issues critically and identify core controversies. The course scrutinizes Europe's role in the world from different theoretical and methodical perspectives. The students analyse and evaluate from different disciplinary and conceptual perspectives such as governance, transregional relations with a special focus on transatlantic relations, postcolonial constellations, and ways of dealing with what has been described as ‘polycrisis’. Methods of the participating disciplines are used in order to discuss, analyse and evaluate Europe's role and position in a research oriented and scientific context.	**Workload:** Attendance time: 56 h Self-study time: 244 h

Course: "Researching European Politics, Society and Culture - Seminar 1" (Seminar) *Course frequency:* each summer semester	2 WLH
Course: "Researching European Politics, Society and Culture - Seminar 1" (Seminar) *Course frequency:* each summer semester	2 WLH
Examination: Term Paper (max. 20 pages)	10 C

Examination requirements: Students learn to: • Critically analyse and synthesise complex information from diverse sources to address key sociopolitical, cultural, and global challenges related to Europe. • Identify, formulate, and investigate scholarly questions using interdisciplinary theoretical frameworks and advanced research methods, with attention to Europe’s evolving role in a global context.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EuCu.30: ResearchLAB: Imagining Europe Differently**	10 C 2 WLH

Learning outcome, core skills: Within this module, students will identify and critically assess current challenges such as climate change or migration from an interdisciplinary perspective. They will pool and apply their knowledge, expertise, and methodological skills to frame and analyze these challenges, identifying key issues and complexities. In their conducting their own research, students will develop and conceptualize innovative, alternative approaches and solutions to challenges, taking into account multiple perspectives and disciplinary insights. In presenting and discussing their research, students will further enhance their skills to communicate complex ideas and solutions effectively.	**Workload:** Attendance time: 28 h Self-study time: 272 h

Course: "ResearchLab" (Seminar) *Course frequency:* each winter semester	
Examination: Oral report with written elaboration Presentation (ca. 15 minutes) and written elaboration (max. 20 pages)	10 C

Examination requirements: Students show that their ability to critically apply theories to societal and political challenges and to discuss alternate approaches. They show their ability to pinpoint their approaches.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: every 4th semester	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.EuCu.62: Research LAB: Imagining Europe Differently**	6 C 2 WLH

Learning outcome, core skills: Within this module, students will identify and critically assess current challenges such as climate change or migration from an interdisciplinary perspective. They will pool and apply their knowledge, expertise, and methodological skills to frame and analyze these challenges, identifying key issues and complexities. In their conducting their own research, students will develop and conceptualize innovative, alternative approaches and solutions to challenges, taking into account multiple perspectives and disciplinary insights. In presenting and discussing their research, students will further enhance their skills to communicate complex ideas and solutions effectively.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: "ResearchLab" (Seminar)	
Examination: Research diary (max. 15 minutes)	15 C

Examination requirements: Students show that their ability to critically apply theories to societal and political challenges and to discuss alternate approaches. They show their ability to pinpoint their approaches.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Simon Fink
Course frequency: each winter semester	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.FES.111: Introduction to Ecological Modelling**	6 C 4 WLH

Learning outcome, core skills: Basic knowledge of classic and modern approaches for modelling dynamics of populations and communities. Skilled in analytical thinking, independent application of models for practical research questions, development of simple models, and critical assessment of the possibilities and limitations of different modeling approaches. Ability to develop an effective model concept.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to ecological modelling (Lecture,Exercise) *Contents*: Using examples from ecology in general and forest ecology in specific, we will cover the following modelling approaches and types: population growth (considering demographic and environmental noise, scramble and contest competition), metapopulation models, predator-prey models, forest growth models, patterns and dynamics of biodiversity, island biogeography, life tables, matrix models, individual-based models, and spatial models. We will also address how to develop a model concept. The course will consist of a mixture of lectures and hands-on work on the computer.	4 WLH
Examination: Term paper (max. 3 pages, 50%) and written examination (45 minutes, 50%)	6 C

Examination requirements: Term paper: Ability to develop an effective model concept. Written examination: Knowledge and understanding of essential characteristics of the modelling approaches covered in class. Ability to interpret model results. Knowledge of possibilities and limitations of the models.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.FES.112: Biodiversity Measurement**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Genetics of populations This course will teach fundamental and applied genetic principles that are essential for the management of forest and other ecosystems to maintain their long-term health and sustainability. The course explores how genetic variation and its loss affect the ability of natural populations to adapt to changing environments. The class will focus on the interrelationship between human impact and evolutionary factors acting on genetic variation patterns in natural populations. Basic principles in population genetics (e.g. measurements of genetic variation, molecular markers techniques, the Hardy Weinberg model, changes in genetic variation by mutation, gene flow, genetic drift, selection) will be presented. Biodiversity of fungi The fungal kingdom consists of possibly up to 5.2 million distinct species of diverse ecological functions. Species biodiversity, evolution and modern taxonomy are defined in bar-coding projects by molecular markers (ITS sequences). Fungi with saprotrophic, symbiotic or pathogenic life styles differ much in their genomes by loss, gain, multiplication and diversification of genes for proteins providing important functions to deal with their specific habitats and substrates. Students will be introduced into computorial programs and DNA and protein databases to analyse fungal molecular markers, gene structures (introns, exons) and protein products (Fasta files, Clustal, MEGA, phylogenetic trees, Blast searches, Signal P) Biodiversity of communities and ecosystems The students learn about fundamental concepts how communities are structured and how their diversity and composition can be analyzed. Basic concepts of community structure (abundance, evenness, rarity), of different scales of diversity (alpha, beta, gamma) as well as of the different dimension of diversity (taxonomic, functional, phylogenetic) will be introduced. Students learn how to perform basic analyses of species diversity in the software package R.	Attendance time: 56 h Self-study time: 124 h

Course: Genetics of populations (Lecture,Exercise)	2 WLH
Course: Biodiversity of fungi (Lecture,Exercise)	1 WLH
Course: Biodiversity of communities and ecosystems (Lecture,Exercise)	1 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements:	
Students should demonstrate sound knowledge of basic concepts in population genetics and community structure, genetic diversity parameters, different scales and dimensions of diversity , methods of fungal biodiversity assessment and of basic analysis tools for biodiversity assessment.	

Admission requirements:	**Recommended previous knowledge:**

none	none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.113: Soil Hydrology**	6 C 4 WLH

Learning outcome, core skills: The course consists of three interconnected parts. The theoretical background (1) describes the fundamental static and dynamic principles of soil water, starting with the special physical properties of water molecules continuing with the basic static traits of soil water, e.g. water content and the energy state. The latter is important for the understanding and calculation of soil water flow under saturated and unsaturated conditions. The water balance of the soils will be completed by the potential sinks of soil water in ecosystems, like e.g. drainage, evaporation, root water uptake, and transpiration. The theoretical lectures will be accompanied by experimental exercises (2): lab measurements of bulk density, water content, water potential, conductivity, pF-curve are important parameters describing the state of soil water. Additionally, automated soil lysimeters with or without plants will be provided to the students for self-initiated experiments. The self-measured hydrological and meteorological time series data are the basis for the third part (3), the modelling of soil water cycles. Based on the learned experimental and theoretical skills, the basic principles of soil water modelling are explained and practiced.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Soil Hydrology (Lecture,Exercise,Practical course)	4 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: Theoretical and experimental skills of soil hydrology	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Claudia Teutschbein
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.115: Statistical Data Analysis with R**	6 C 4 WLH

Learning outcome, core skills: Introduction to R as programming language for beginners, statistical data analysis including explorative data analysis, plotting, basic tests (t, F, non-parametric), ANOVA, simple linear regression, multiple regression, analysis of residuals, ANCOVA, non-linear regression, glms with focus on logistic regression, short introduction to tidyverse and ggplot; always including introduction to theory and to practical implementation in R.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Statistical Data Analysis with R (Lecture,Exercise)	4 WLH
Examination: Presentation (approx. 15 min.) with written outline (max. 10 pages)	6 C

Examination requirements:

- Import data into a statistics software and perform an explorative data analysis
- Display data graphically
- Select appropriate statistical approaches or models for data analysis
- Discuss the advantages and disadvantages of statistical approaches or models
- Apply statistical approaches or models to given data
- Explain and test assumptions of statistical approaches or models
- Interpret the results of the data analysis
- Suggest meaningful follow-up analyses
- Present and explain the procedures involved in a statistical data analysis

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Katrin Mareike Meyer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Additional notes and regulations:
30 students are only possible if a corresponding number of computers is available

Georg-August-Universität Göttingen **Module M.FES.121: Advanced Data Analysis with R**	6 C 4 WLH

Learning outcome, core skills: Advanced data analysis skills with program R. Topics of this module include data management and organization, working with spatio(temporal) data, visualization of data, and applying appropriate statistical modeling techniques. Modeling starts with a thorough review of the linear model. Subsequently situations where assumptions of the linear model are violated are shown and potential solutions are discussed.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Data Analysis with R (Lecture)	2 WLH
Course: Advanced Data Analysis with R (Exercise)	2 WLH
Examination: Oral examination (approx. 20 minutes)	6 C

Examination requirements: • Handle and organizing data sets (merging data from multiple sources, perform subsets and filter operations, calculate new variables) • Work with spatial data (vector and raster), perform basic operations. • Visualize data, choose appropriate models, validation and interpretation of models, and state potential caveats of models used.	

Admission requirements: M.FES.115: Statistical Data Analysis with R	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Johannes Signer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.FES.122: Ecological Simulation Modelling**	6 C 4 WLH

Learning outcome, core skills: • Knowledge of the modelling techniques covered; • Ability to find a suitable modeling technique for a given problem in the area of ecology and to apply it independently; • Knowledge of the current state of research in ecological modelling; • Critical appreciation and discussion of research results; • Refined presentation techniques; • Knowledge of constructive feedback techniques.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Simulation Modelling (Lecture,Exercise)	3 WLH
Course: Current Topics in Ecological Modelling (Seminar)	1 WLH
Examination: Presentation (approx. 15 min) with written outline (max. 10 pages) **Examination prerequisites:** Presentation (approx. 15 Minutes), ungraded	6 C

Examination requirements: • Know, explain, apply, analyse and assess model types that are applied in ecology • Know, explain, apply, analyse and assess the stages of model development along the modeling cycle • Present, explain and critically reflect a self developed simulation model • Understand and summarize published model studies and point out and discuss their possibilities and limitations	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:

20 students are only possible if a corresponding number of computers is available.

Module is also applicable for other study programs, such as MSc "Biological Diversity and Ecology", MSc "Agriculture" (specialization Ressourcenmanagement).

Georg-August-Universität Göttingen **Module M.FES.123: Functional-Structural Plant Models**	6 C 4 WLH

Learning outcome, core skills: Basic knowledge and understanding of ecophysiological foundations for FSPM (functional-structural plant models) and of the corresponding frameworks from computer science (formal grammars, rule-based programming paradigm, software tools); assessment of the possibilities and limits of FSPMs; ability to analyse an FSPM and to parameterize it based on one's own data; acquaintance with methods of simulation and visualization.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Functional-Structural Plant Models (Lecture,Exercise) *Contents*: Overview about FSPMs; Lindenmayer systems, graph grammars and basic features of rule-based modelling and programming, e.g. in the language XL; software tools for FSPMs (e.g., the platform GroIMP – partially supported by eLearning units); basic knowledge about physiological processes, e.g., photosynthesis; approaches for modelling plant architecture, processes and the linkage of structure and function in plants; basics about data acquisition of morphological and physiological traits of woody plants; digital representation of measured branching systems and of selected processes; analysis, parameterization, modification and evaluation of an existing FSPM. *Form:* Lectures and exercises (weekly) and practical work (measurement campaign: block course).	4 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: To show basic knowledge and understanding of ecophysiological foundations for FSPM (functional-structural plant models) and of the corresponding frameworks from computer science (formal grammars, rule-based programming paradigm, software tools); assessment of the possibilities and limits of FSPMs; ability to analyse an FSPM and to parameterize it based on one's own data; acquaintance with methods of simulation and visualization.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Kurth
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.124: Modern Concepts and Methods in Macroecology and Biogeography**	6 C 4 WLH

Learning outcome, core skills: The course will introduce students to the principles and modern methods in macroecology and biogeography. Students will gain a comprehensive understanding of the physical and biological processes influencing species distributions and diversity patterns worldwide. Additionally, students will be introduced to modern environmental and biodiversity modelling methods in R, which are important for analyzing and understanding the consequences of global change on species distributions. In self-directed projects, students will work with real data to solve modern macroecological problems. Through these theoretical and practical classes, students will gain a profound understanding of modern macroecological and biogeographical concepts, including threats to biodiversity and conservation prioritization.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Modern Concepts and Methods in Macroecology and Biogeography (Lecture,Exercise) *Contents*: Exercise = Computer course (3 WHL) and Lectures (1 WHL)	4 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: Students can apply knowledge about modern concepts and methods in macroecology and biogeography. They demonstrate knowledge on how to plan, conduct and report on a macroecological analysis using modern computer software.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in R is a central pre-requisite to attend this module
Language: English	**Person responsible for module:** Prof. Dr. Holger Kreft
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.FES.131: Project: Ecosystem Analysis and Modelling**	12 C 2 WLH

Learning outcome, core skills: Usage of GIS and/or other software tools and modelling techniques to work on an interdisciplinary topic; autonomous acquisition of know-how and competencies for scientific problem solving; ability to interdisciplinary, strategic thinking; team work and organisation of tasks, scientific presentation and discussion; writing a final report in the style of a scientific article.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Project: Ecosystem Analysis and Modelling *Contents*: Each topic will be proposed by a researcher from the Faculty of Forest Sciences and Forest Ecology who will then be the principal supervisor for this topic. To ensure the interdisciplinary character of the project, a second supervisor should come from a department different from that of the principal supervisor. A topic can be worked upon by a single student or (preferentially) by a team of two or three students. In the case of teamwork, the final report must contain sections which can be attributed to one individual author.	2 WLH
Examination: Presentation (approx. 20 minutes, 33 %) and term paper (max. 15 pages, 67%)	12 C

Examination requirements: Ability to use GIS and/or other software tools and modelling techniques to work on an interdisciplinary topic; autonomous acquisition of know-how and competencies for scientific problem solving; ability to interdisciplinary, strategic thinking; team work and organisation of tasks, scientific (oral) presentation and discussion; writing a final report in the style of a scientific article.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Kurth
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:
Will be coordinated by W. Kurth in the winter semester and by M. Jansen in the summer term.

Georg-August-Universität Göttingen **Module M.FES.211: Ecosystem Analytics**	6 C 4 WLH

Learning outcome, core skills: In order to understand how diverse living organisms in the ecosystem interact with each other and how their physical/chemical structures change, diverse analytical methods will be introduced herein. Various analytical methods for the understanding of diverse bioprocesses, e.g. the biocompounds including wood with distinct morphologies on diverse length scales ranging from molecular level through nano- to microscale will be shown using diverse methods. These include diverse spectroscopic, chromatographic, thermal and mechanical, and many other analytical methods. Based on the modification of chemical compositions of diverse material matrix in the ecosystem, the structure-functions and structure-property relationship will be further described. A few chosen relevant analytical techniques will be used for the exercises. Objective of the course: The purpose of the course is to learn diverse analytical methods in details.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecosystem Analytics (Lecture,Exercise)	4 WLH
Examination: Written examination (60 minutes, 50%) and written report (max. 25 pages, 50%)	6 C

Examination requirements: Principles of diverse analytical methods, hand-on application	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. rer. nat. Kai Zhang
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.221: Modern Methods in Ecology**	6 C 4 WLH

Learning outcome, core skills: Ecophysiology Students learn how to assess the vigor of plants by analyzing different ecophysiological parameters like photosynthesis and transpiration rate, stomatal conductance, leaf water potential and chlorophyll fluorescence. The practical course comprises an introduction into measurement technologies and conduction of an outdoor experiment to analyze the diurnal variations of those parameters. The practical course is accompanied by lectures in which the theoretical background of these parameters will be explained. Diversity Students learn about the use of biodiversity estimates in assessing different forest ecosystem functions and about mycorrhiza symbiosis. The practical part includes an individual project assessing the diversity of ectomycorrhizal fungal communities in different habitats (soil samples). The students identify fungi by both microscopic methods as well as DNA sequencing. The students calculate community diversity indices using R programming, compare the different fungal communities, and discuss possible implications for forest ecosystems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecophysiology (Lecture,Exercise)	2 WLH
Course: Diversity (Lecture,Exercise)	2 WLH
Examination: 2 protocols (each max. 10 pages, each 50%)	6 C

Examination requirements: Knowledge of important ecophysiological parameters, self-reliant determination of ecophysiological parameter using suitable measurement devices, precise documentation of data and interpretation of this data in the scientific context.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Ines Teichert
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.FES.222: Community Ecology**	6 C 4 WLH

Learning outcome, core skills: Students learn about modern concepts and methods in plant and animal ecology, specifically how to design and conduct field surveys, and how to collect and analyze data on community composition, functional traits, and ecological functions. The students conduct self-directed field work projects, with a focus on either plant or animal communities, and analyze the data using the software R. Topics to be addressed include: assessments of multiple dimensions (taxonomic, functional, phylogenetic diversity) and scales (alpha, beta, gamma) biodiversity, species identification, analysis of plant and animal community structure, and ecological functions based on traits and trophic interactions.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Animal diversity and ecological functions (Lecture,Exercise)	2 WLH
Course: Plant diversity (Lecture,Exercise)	2 WLH
Examination: Oral presentation (max. 15 minutes, 20%) and term paper (max. 10 pages, 80%)	6 C

Examination requirements: • Understanding concepts and methods in community ecology • Ability to design and conduct field studies • Analyzing and understanding patterns of diversity, community composition, functional traits, and ecological functions	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in R and basic identification skills (plants/animals)
Language: English	**Person responsible for module:** Prof. Dr. Andreas Schuldt
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** Master: 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.FES.223: Experimental Bioclimatology**	6 C 4 WLH

Learning outcome, core skills: The student will learn about measuring, analyzing and interpreting bioclimatological processes in terrestrial ecosystems such as air temperature, air humidity, wind velocity, air pressure, radiation and their impacts on CO2, water and energy fluxes. After a seminar part, the students will install a fully equipped meteological station and analyze the data and evaluate the meteorological conditions and ecosystem-atmosphere exchange processes of a site.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Experimental Bioclimatology (Exercise)	2 WLH
Course: Experimental Bioclimatology (Seminar)	2 WLH
Examination: Presentation (approx. 20 minutes, 25%) and term paper (max. 15 pages, 75%)	6 C

Examination requirements: Understanding of bioclimatological processes and how they are measured. Ability to work with meteorological instruments, analyse and interpret data.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Nils Knohl
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.FES.224: Soil Physical and Biochemical Processes**	6 C 4 WLH

Learning outcome, core skills: Soil chemistry (cation exchange capacity, soil acidification and alkalinization, nutrient element solubility), soil biochemistry (redox reactions, microbial biochemistry), soil greenhouse gas production and consumption (energy, biochemistry, environmental impacts), soil biological communities and functions, decomposition (energy flow, nutrient release), soil N cycling (biochemistry, energy and N transformation rates, leaching losses), landscape-scale approaches of quantifying soil biochemical processes (e.g. greenhouse gas budgets, nutrient cycling rates), land-use change impacts on soil functions, terrestrial P and S cycles.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Soil Physical and Biochemical Processes (Lecture)	2 WLH
Course: Soil Physical and Biochemical Processes (Exercise)	2 WLH
Examination: Written examination (120 minutes, 50%) and term paper (max. 10 pages, 50%)	6 C

Examination requirements: Examination of the covered lectures. Scientific writing of a topic within the scope of soil physical and biochemical processes. Participation in the field measurements and calculations of soil greenhouse gas fluxes, cation exchange capacity, and stocks of organic C, total N, and nutrient elements.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Marife Corre
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.231: Project: Ecosystem Sciences**	12 C 2 WLH

Learning outcome, core skills: Using and applying modern methods in ecosystem sciences to work independently on a research project; autonomous acquisition of know-how and competencies for scientific problem solving; ability to interdisciplinary, strategic thinking; team work and organisation of tasks, scientific presentation and discussion; writing a final report in the style of a scientific article.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Project: Ecosystem Sciences (Seminar) *Contents*: Each topic will be proposed by a researcher from the Faculty of Forest Sciences and Forest Ecology who will then be the principal supervisor for this topic. To support an interdisciplinary character of the project, a second supervisor may come from a department different from that of the principal supervisor. A topic can be worked upon by a single student or by a team of two or three students. In the case of teamwork, the final report must contain sections which can be attributed to one individual author.	2 WLH
Examination: Presentation (approx. 20 minutes, 30 %) and term paper (max. 15 pages, 70%)	12 C

Examination requirements: Demonstration of ability to conduct, analyse and report on an independent scientific research project.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Nils Knohl
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations: Will be coordinated by A. Knohl in the summer semester and by A. Polle in the winter semester

Georg-August-Universität Göttingen **Module M.FES.311: Tropical Forest Ecology and Silviculture**	6 C 4 WLH

Learning outcome, core skills: General understanding of ecological concepts regarding tropical forests and their characteristics. Critically analyse silvicultural systems considering their advantages and drawbacks.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Tropical forest ecology and silviculture (Lecture) *Contents*: This course focuses on the ecology of tropical rain forests, threats to forests and options for ecologically sound land use. Lectures on forest ecology include characteristics of different tropical forest types such as lowland forest, montane forest, mangrove forest, and additionally the biodiversity of the forest, the role of fire, and the carbon balance of forests. More applied topics address silvicultural systems such as polycyclic and monocyclic management systems.	4 WLH
Examination: Oral examination (approx. 20 minutes)	6 C

Examination requirements: Emphasis lies on the ecology of tropical rain forests and options for ecologically sound management. Students shall know e.g. characteristics of different forest types, features of management systems and discuss land use options.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Dirk Hölscher
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.312: International Forest Policy and Economics**	6 C 4 WLH

Learning outcome, core skills: **Global environmental and forest policy:** The objective is that students get basic knowledge of both the key policies related to forests and the application of the policy analysis on such issues. Students acquire comprehension about global forest related policy processes and factual knowledge about forest actors affecting the policy on a global level. The seminar combines a lead-in to global policy theory and its translation in practical, empirical knowledge about actors and processes of high importance in forestry. The different instruments for international policy formulation and implementation are discussed using case studies. **International forest economics:** The lecture is split in two main areas: 'International Wood Markets' and 'International Environmental and Forest Conservation'. The first part deals with the international trade with wood and wood products. International markets and the consequences of protectionism are analysed. Furthermore, aspects of international wood marketing are shown. In the second part, international environmental problems are described and possibilities as well as constraints for international co-operation are discussed. Finally, relations between environmental conservation and economic development are analysed.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Global environmental and forest policy (Seminar)	2 WLH
Examination: Written examination (60 minutes)	3 C

Course: International forest economics (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: • Familiarity with international wood markets and international trade with wood and wood products • Understanding of international wood marketing • Ability to analyse consequences of protectionism • Apply economic theory in order to analyse possible solutions towards international environmental problems • Sound understanding of the relations between forest conservation and economic development	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Carola Paul
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

cf. examination regulations	
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.313: Monitoring of Forest Resources**	6 C 4 WLH

Learning outcome, core skills: Familiarize the students with the range of methods and techniques applied to forest monitoring in the preparation, planning, implementation and analysis phase. Objective is that the students are eventually in the position to carry out their own monitoring projects, and that they have the criteria to judge the quality of monitoring projects in general. Focus is on the target-oriented planning and the definition of the most appropriate sampling design and plot design that guarantees the generation of high-quality information for the decision makers in forestry. Remote sensing integration is addressed and is in more detail the subject of an other lecture module.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Monitoring of forest resources (Lecture,Exercise) *Contents*: Forest monitoring is a forestry discipline that aims at the comprehensive and objective characterization of the forests as a production system and/or as an ecological system in a defined geographic area, in terms of status quo and changes. Forest inventories are the core element of monitoring and they generate data and information required by foresters, forest politicians and forest researchers to support decision making. The course module “Monitoring of forest resources” intends to familiarize the students with the range of methods and techniques applied to forest inventories in the preparation, planning, implementation and analysis phase. Objective is that the students are eventually in the position to carry out their own monitoring projects of forests and related resources, and that they know the criteria to judge the quality of monitoring projects in general. Focus is on the target-oriented planning and the definition of the most appropriate sampling design and plot design that guarantees the generation of high-quality information for the decision makers in forestry. An important focus is here the random error sources and approaches to limit their impact on the results. That includes comprehensive presentation of statistical sampling. Examples of small and large area inventories and monitoring are presented and critically analysed. The important remote sensing applications for forest monitoring are not dealt with in detail in this module, as this topic is covered in other modules; but the relevance of integrated inventories (combining field sampling and remote sensing) is addressed. The development of forest inventories towards integrated “landscape inventories”, “multi-resource inventories”, “tree inventories” is also addressed of this course. Prerequisites: Sound basic knowledge in the disciplines of "Forest Mensuration" and in "descriptive statistics".	4 WLH
Examination: Written exam (120 minutes)	6 C

Examination requirements: In the module „Monitoring of Forest Resources“, the students should know and be able to manage and understand all topics that were covered in the lectures and labs. This includes: • the relevance of data sources and data quality;	

- the relevance of methodological soundness in planning, implementing and analyzing forest inventory data;
- the basic principles of in planning, implementing and analyzing forest inventory data;
- important options of sampling and plot design and its characteristics (including application examples and calculation of estimates);
- the critical reading of forest inventory reports;
- the role of forest inventories when monitoring the “resource forest” and the “ecosystem forest“;
- the role of forest inventory and forest monitoring in decision processes at stand-, enterprise-, national and global level.

And, of course, calculation skills in producing sample based estimates are equally relevant.

Admission requirements: none	**Recommended previous knowledge:** Required is a good command of forest mensuration, descriptive statistics, basic sampling statistics and cartography (along what is commonly covered in Bachelor study programs).
Language: English	**Person responsible for module:** Prof. Dr. Christoph Kleinn
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.314: Forest Utilization and Wood Processing**	6 C 4 WLH

Learning outcome, core skills: Students gain knowledge of technological relevant wood properties of important commercial timbers and technology of major forest products in tropics (lumber, veneer, plywood, woodbased panels, pulp and paper). Students are able to plan, evaluate and select forest operations with respect to technical implementation, human impacts and environmental consequences. In addition, forest operations are put into the broader context of society and forest ecosystems and stresses of the human factor involved. Emphasis is directed to systems analysis and long-term perspectives.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forest utilization (Lecture) *Contents*: The module covers forest areas of the world and their characteristics with regard to forest operations, forest products, sorting of timber, fuelwood, technical systems and work methods for harvesting and other forest operations, ergonomics, occupational safety and health, appropriate technology, economic analysis of forest operations. In addition, basic elements of road planning, construction and maintenance are presented and information about recent developments (information and communication technology, GIS, logistics) are given.	2 WLH
Course: Wood processing (Lecture) *Contents*: We will impart consolidated knowledge about wood properties considering wood anatomy, wood physics, and wood chemistry including the role of water related to wood. Wood energy. Sawmill technology and wood products. Special regard on wood-based composites like particleboard, fiberboard, plywood, OSB and WPC. Wood destroying insects and fungi. Wood preservation and modification.	2 WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: Wood processing: The students should know the basics of wood properties in context with chemistry and micro-structure. They must know how to optimize the use of wood by producing convenient wood-based products and how to protect them. Forest utilization: The students should be able to describe and analyse the complex setting of forest operations and to find optimal solutions integrating economic, ecological, ergonomical and social aspects.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Dirk Jaeger

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.315: Monitoring of Forests and forrested Landscapes**	6 C 4 WLH

Learning outcome, core skills: Familiarize the students with the range of methods and techniques applied to forest monitoring in the preparation, planning, implementation and analysis phase. Objective is that the students are eventually in the position to carry out their own monitoring projects, and that they have the criteria to judge the quality of monitoring projects in general. Focus is on the target-oriented planning and the definition of the most appropriate sampling design and plot design that guarantees the generation of high-quality information for the decision makers in forestry. Remote sensing integration is addressed and is in more detail the subject of an other lecture module.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Monitoring of Forests and forrested Landscapes (Lecture,Exercise) *Contents*: Forest monitoring is a forestry discipline that aims at the comprehensive and objective characterization of the forests as a production system and/or as an ecological system in a defined geographic area, in terms of status quo and changes. Forest inventories are the core element of monitoring and they generate data and information required by foresters, forest politicians and forest researchers to support decision making. The course module “Monitoring of forest resources” intends to familiarize the students with the range of methods and techniques applied to forest inventories in the preparation, planning, implementation and analysis phase. Objective is that the students are eventually in the position to carry out their own monitoring projects of forests and related resources, and that they know the criteria to judge the quality of monitoring projects in general. Focus is on the target-oriented planning and the definition of the most appropriate sampling design and plot design that guarantees the generation of high-quality information for the decision makers in forestry. An important focus is here the random error sources and approaches to limit their impact on the results. That includes comprehensive presentation of statistical sampling. Examples of small and large area inventories and monitoring are presented and critically analysed. The important remote sensing applications for forest monitoring are not dealt with in detail in this module, as this topic is covered in other modules; but the relevance of integrated inventories (combining field sampling and remote sensing) is addressed. The development of forest inventories towards integrated “landscape inventories”, “multi-resource inventories”, “tree inventories” is also addressed of this course. Prerequisites: Sound basic knowledge in the disciplines of "Forest Mensuration" and in "descriptive statistics".	4 WLH
Examination: Written exam (120 minutes)	6 C

Examination requirements: In the module „Monitoring of Forests and forrested Landscapes“, the students should know and be able to manage and understand all topics that were covered in the lectures and labs. This includes: • the relevance of data sources and data quality;	

- the relevance of methodological soundness in planning, implementing and analyzing forest inventory data;
- the basic principles of in planning, implementing and analyzing forest inventory data;
- important options of sampling and plot design and its characteristics (including application examples and calculation of estimates);
- the critical reading of forest inventory reports;
- the role of forest inventories when monitoring the “resource forest” and the “ecosystem forest“;
- the role of forest inventory and forest monitoring in decision processes at stand-, enterprise-, national and global level.

And, of course, calculation skills in producing sample based estimates are equally relevant.

Admission requirements: none	**Recommended previous knowledge:** Required is a good command of forest mensuration, descriptive statistics, basic sampling statistics and cartography (along what is commonly covered in Bachelor study programs).
Language: English	**Person responsible for module:** Prof. Dr. Christoph Kleinn
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.321: Ecopedology of the Tropics and Subtropics**	6 C 4 WLH

Learning outcome, core skills: General understanding of the most important aspects of tropical and subtropical soils, their occurrence, genesis, geography, properties and use. Understanding the principles of the international FAO soil profile description and classification.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecopedology of the Tropics and Subtropics (Lecture) *Contents*: Part I: General introduction in soils of the tropics and subtropics, their functions, genesis, geography and properties. Objective: general understanding of the most important aspects of tropical soils, their occurrence, genesis, properties and use. The following topics will be discussed: Introduction; Climate, water and vegetation; Weathering and weathering products, clay minerals; Soil organic matter, C and N dynamic; Soil chemical reactions, variable charge; Soil forming processes and development of soils; Water and nutrient cycling of land use systems; Tropical shield areas (example: Amazon basin); Arid shields and platforms (example: West Africa); Tropical mountain areas (example: Andes); Fluvial and coastal areas in the tropics (example: coastal areas in Asia). Part II: Introduction in the description and classification of soils, using in international system (FAO). Objective: understanding the principles of the FAO soil profile description and classification. The course consists of introductory lectures in which the principles of the FAO soil description and classification will be explained. This knowledge will be practiced using examples of soil profiles from different tropical countries. The second part consists of a practical week during which soil profile descriptions and evaluations will be exercised in the field. We will visit three contrasting sites around Göttingen where a site and soil description will be made. The work will be done in small groups. Students discuss their results in a report.	4 WLH
Examination: Term paper (10 pages max.) and written exam (2 hours)	6 C

Examination requirements: Being able to describe, classify and evaluate soils for forestry applications in (sub)tropical regions. Understand most relevant biogeochemical processes and function of (sub)tropical soils. Calculate water and nutrient stocks in soils. Explain differences between soils in different (sub)tropical regions.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Edzo Veldkamp
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**

Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.322: Project Planning and Evaluation**	6 C 4 WLH

Learning outcome, core skills: **Political evaluation** Insights into the political framework of evaluation and the power and information based processes which drive any procedure of evaluation and application of the results in practice. The students conduct a case study in political evaluation based on literature and an interactive game. **Evaluation of rural development projects and policies** In cooperation with the chair of „International Food Economics and Rural Development" this submodule teaches and trains the economic and financial assessment of rural development projects (in particular cost-benefit analysis). The methods are illustrated with examples and students learn to apply these methods in different exercises. **Project planning and management** Understanding theoretical concepts and practical considerations for planning and management of international forestry projects with a focus on international cooperation. A deeper understanding of the subject-matter is achieved by examples presented by guest lecturers and practitioners.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Political evaluation (Lecture)	1 WLH
Course: Evaluation of rural development projects and policies (Lecture,Seminar)	2 WLH
Course: Project planning and management (Lecture,Seminar)	1 WLH
Examination: Written examination (90 minutes, 50%) and term paper (max. 5 pages, 50%)	6 C

Examination requirements:

- Ability to describe and explain international policy frameworks in development policy
- Capability to independently analyse policy case studies
- Have a good command of basic impact assessment and cost-benefit analysis in the context of international project evaluation
- Apply aspects of environmental and welfare economics to project case studies
- Understanding of key aspects of Sustainable Development, Capacity Development, Change management and international coordination and cooperation for successful implementation of forestry projects
- Critically analyse and develop a forestry project case study

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Carola Paul

Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.323: Biometrical Research Methods**	6 C 4 WLH

Learning outcome, core skills: Introduction in basics of statistical data analysis: Probability distribution, estimation, hypotheses testing. Understanding and application of basic techniques of descriptive and confirmative statistics: Confidence intervals, t-test, ANOVA, correlation and regression analyses. Understanding assumptions of statistical tests. Analysis of experimental data sets via the statistical program “R”. Interpretation of analysis results. Skills in describing and estimating forest stand parameters, forest structure and tree shape, and modeling of forest growth and development.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Biometric data analysis and experimental design (Lecture,Exercise)	2 WLH
Course: Forest dynamics (Lecture,Exercise)	2 WLH
Examination: PC based written exam (120 minutes)	6 C

Examination requirements: Understanding and application of basic techniques of descriptive and confirmative statistics. Analysis of given experimental data sets via the statistical program “R”, interpretation of analysis results to answer the examination questions. Knowledge of quantitative methods to describe forest density, forest structure and tree morphology. Modeling tree growth, calculating sustainable harvests for even-aged and continuous cover forests and understanding of the biological role of insects in forest ecosystems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Irina Kuzyakova
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Additional notes and regulations:
For the course “Biometric data analysis and experimental design,” it is necessary to bring own laptop.

Georg-August-Universität Göttingen **Module M.FES.324: Environmental Biotechnology and Forest Genetics**	6 C 4 WLH

Learning outcome, core skills: Basic principles of population genetics are introduced, factors shaping genetic diversity of tropical forest species are discussed with emphasis on the reproduction system of tropical forest plants, and genetic diversity patterns of tropical forest trees are described. Main applications of forest genetics are mentioned: provenance research and tree breeding, genetic implications of forest management, forest reproductive material, and conservation of forest genetic resources.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Tropical Forest Genetics (Lecture)	2 WLH
Course: Environmental Biotechnology (Lecture)	2 WLH
Examination: Oral examination (approx. 15 minutes)	6 C

Examination requirements: Sound knowledge of learning contents, achievement of learning outcomes and proof of aspired core skills.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ursula Kües
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.705: Forest Protection and Agroforestry**	6 C 4 WLH

Learning outcome, core skills: Assessment of forest protection problems and available methods of insect or pathogen control with special emphasis on sustainable methods. Basic understanding of agroforestry systems in the tropics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forest protection and agroforestry (Lecture) *Contents*: Forest protection is aimed at protecting natural, near natural and plantation forests from disease and pests. Diseases do include abiotic diseases (damage from lack and excess of nutrients, fire, drought pollution, etc.) and biotic diseases caused by microorganisms including viruses and protozoa, and parasitic plants. Forest protection deals also with damage from animal pests, meaning arthropods and there specially insects, but also damage from mammalians. The matter is presented in a concept of integrated pest and disease management, here pests and diseases affecting specific tree species (mahogany, teak, Pinus, Dipterocarpaceae, Acacia, Eucalyptus, etc.) are treated together. Beside this core lectures. A prerequisite for the lectures and practical training, is knowledge of basic subjects of phytomedicine. However, if necessary, missing, incomplete and not up to date knowledge may be supplemented in lectures such as: Overview of abiotic diseases, theoretical approach to integrated pest and disease management, biological, bio-technical and chemical control of pests and diseases. The main focus of the module is explanation of specific (and for forest protection important) features of the individual tree species and/or forest types, diagnostic of the disease and pest attack and explanation of strategies for the integrated management of the disease or pest. Possible control strategies include. Experiences of the lecturers are in Germany and abroad (South and Central America, North Africa and South East Asia) and advice can be provided also in Spanish. silvicultural based measures, i. e. displacing the attack of diseases and pests by changing planting distance, managing shadow, managing thinning, establishing mixed stands, change of logging practices. Reducing spread of disease or pest by eradication of individual trees or group of trees or certain areas of the forest (hot spots) or manual collecting of specific insect stages. Genetic based measures i. e. resistant species, subspecies, f. sp., varieties and different provenience, and, if available, genetic engineered plants trimmed for resistance to diseases and pests. Chemical oriented plant protection. Applied according to the principles of integrated pest management, which includes economic threshold, consideration of the residue problems and health of the applying forester. Basic knowledge are required, but may be supplied in a specific lectures. Biological and biotechnical oriented plant protection. In this context experiences and possibilities of applying these measures in the field are being discussed. Specific examples are treated and possible approaches to new problems are discussed. The influence of different factors (including the above listed approaches) on the biological and biotechnical plant protection are considered. Basic knowledge is required, but may be supplied in specific lectures. Agroforestry systems are land-use systems and practises in which woody perennials are deliberately grown	4 WLH

on the same land management unit as crops and/or animal husbandry, either in some form of spatial arrangement or in a time sequence, and in which there is a significant interaction between the woody perennials and the crops or animals. Starting with general considerations in agroforestry systems, a selection of systems in which trees or other woody perennials play an important role are discussed: The classical Taungya System, the tumpangsari system in Java, the Malang and Magelang system, the Juhm system of Nagaland, different home and forest gardens of S-E-Asia. In detail discussed are the role of trees in agroforestry systems and a selection of suitable tree species for agroforestry systems.	
Examination: Written exam (120 minutes)	6 C

Examination requirements: Kenntnis der beschriebenen Lehrinhalte, Erreichung der festgelegten Lernziele und Nachweis der angestrebten Kompetenzen.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** N. N.
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.709: Research Internship in Data Analysis**	6 C

Learning outcome, core skills: In the framework of a practical work of (at least) 4 weeks and under scientific supervision by a lecturer involved in the study focus “Ecosystem analysis and modelling”, the students shall gain experiences in working on a topic from the fields of data analysis, modelling and information processing, shall get acquainted with current problems, methods and workflows and will have the possibility to establish contacts for later professional work. To the latter purpose, the student will work in a company, a planning institution, a forest administration, a research institution or another organization which practises data processing with ecosystemic applications (host institution). The choice of this institution can be initialized by the student and/or by the supervising lecturer and needs the approval of the coordinator of the study focus “Ecosystem analysis and modelling”.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Research Internship in Data Analysis *Contents*: At the beginning of the research internship, the supervisor states the topic which has to be worked upon and which will finally be presented in a written homework. *Form:* Self-organized work on the given scientific topic under supervision.	
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: Competencies in the application of established methods and software tools for data analysis, modelling, geodata evaluation and/or simulation on a given problem which was stated in collaboration with a national or international institution which is doing data processing with ecosystemic orientation. Presentation of the methods and results in a written homework, according to the criteria of good scientific practice.	

Admission requirements: Participation needs an individual agreement by the supervising lecturer and by the collaborating institution and should be initialized in time (at least 3 months prior to the beginning of the internship).	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Winfried Kurth
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

The research internship lasts at least 4 weeks and has to be done without interruption and in cooperation with only one host institution. After finalization, a written confirmation by the host institution has to be presented.

This module is equivalent to the corresponding German-language module „Forschungspraktikum Datenanalyse“.

Georg-August-Universität Göttingen **Module M.FES.710: Management of research and science policy**	6 C 2 WLH

Learning outcome, core skills: The aim is to get professional knowledge and experiences how to design and management research projects.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Management of research and science policy (Seminar) *Contents*: The management of research projects and transfer of scientific knowledge are analyzed based on social sciences theory of research and interdisciplinary approaches. The focus is the design of programs for research in all kind of disciplines, the implementation of programs and projects and the evaluation. In addition the transfer of scientific knowledge into practice is an important part in theoretical teaching and exercises for students. The students conduct a cases study. They use literature and other written sources. Most important are the own experiences of the students with research. The cases will be discussed in the seminar and a written report will be worked out.	2 WLH
Examination: Presentation (approx. 20 minutes) with written outline (max. 20 pages)	6 C

Examination requirements: • Knowledge of the political theory of management of research and knowledge transfer • Application in a case study	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Maximilian Krott
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 12	

Additional notes and regulations: After successfully completing this module students can not chose M.Forst.747 anymore.

Georg-August-Universität Göttingen **Module M.FES.712: Bioclimatology and Global Change**	6 C (incl. key comp.: 6 C) 4 WLH

Learning outcome, core skills: Scientific basis of climate and climate change, trace gas budgets of soils and whole ecosystems and the potential to sequester carbon and nitrogen in managed and unmanaged terrestrial ecosystems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Bioclimatology and Global Change (Lecture,Seminar) *Contents*: The module "Bioclimatology and Global Change" will introduce the students to the global climate system and its interaction with the biosphere. A lecture course will focus on the scientific basis of climate and climate change covering basic physical and chemical processes governing the climate system, climate zones, modelling as well as global and regional climate phenomena with a focus on tropical climates. A seminar course will highlight trace gas budgets of soils and whole ecosystems and their potential to sequester carbon and nitrogen in managed and unmanaged terrestrial ecosystems and their vulnerability to climate change. Using journal literature the students will work out oral presentations concerning current research topics concerning the global climate system and its interaction with the biosphere.	4 WLH
Examination: Oral exam (approx. 20 minutes, 50%) and oral presentation (approx. 20 minutes, 50%)	6 C

Examination requirements: Understanding the most relevant processes at the biosphere-atmosphere interface and of biogeochemical cycles. Being able to find, read, evaluate, and present scientific literature related to Global Change.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Nils Knohl
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.FES.713: Forestry in Germany**	6 C 4 WLH

Learning outcome, core skills: Understanding of forestry and related industries in Germany.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Forestry in Germany (Excursion,Seminar) *Contents*: Important aspects of German Forestry are introduced to foreign students interested in the forest management as practised in Germany as well as the wood-processing industry. Contents are forest management, silviculture, forest utilization, labor science and prozess technology, forest econmics, tree improvement and genetics, forest inventory and remote sensing (forest management inventories in Germany, the German National Forest Inventory, applications of remote sensing in forestry planning in Germany) The module provides a basic understanding of the forest management in Germany including actual trends and perspectives. It is strongly suggested for foreign students who are going to undertake their project in Germany (Project: 70130 "Managing sustainable forestry systems in Germany"). The module includes various excursions.	4 WLH
Examination: Oral presentation (approx. 15 minutes, 20%) with written outline (max. 1 page, 80%)	6 C

Examination requirements: The students should know and manage and understand the topics that were covered during the field trip that AWF (Forest Inventory and Remote Sensing) offers. This includes forest mensuration, forest monitoring and forest planning. Show familiarity with current approaches, trends and future challenges in forestry and the wood-processing industry in Germany Show understanding of the overall structure of forestry and forest research in Germany and the connection between the sub disciplines Be able to communicate and critically analyse a selected aspect of German forestry in a coherent way. The written outline is a poster.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in forest management, forest planning, forest monitoring.
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each summer semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.715: Dryland Forestry and Methods in Silviculture**	6 C 4 WLH

Learning outcome, core skills: Understanding the specifics of dryland forestry as well as principles and applications of plant ecological and silvicultural methods.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Dryland Forestry and Methods in Silviculture (Lecture,Exercise,Seminar) *Contents*: The lecture focuses on land-use options emphasising the management of dry forests on a global scale. Covering approximately 30% of the global land surface, drylands pose important ecological and economic impacts, and therefore require specific approaches in management. The second focus of this module is on recent topics in silviculture and the familiarization of relevant plant ecological and silvicultural methods. This includes discussion of study designs, airborne and ground-based assessments as well as options of data analysis and presentation. Selected case studies from literature will also be analysed.	4 WLH
Examination: Oral presentation (approx. 15 minutes, 50%) with written outline (max. 10 pages, 50%)	6 C

Examination requirements: Knowledge on ecological and economic aspects of dryland forestry; tree ecological characteristics and management options. Analysis, presentation and discussion of case studies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Dirk Hölscher
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.FES.725: Spatial Statistics**	6 C 4 WLH

Learning outcome, core skills: • Knowledge of statistical methods of spatial point pattern analysis • Introduction to analysis software (*Programita* , *R*) to analyze spatial point pattern analysis • Planning and execution of a scientific investigation based on spatial statistics • Understanding of motivations, methods and interpretations of spatial point pattern analyses in different ecosystems around the world • Insights into general work circumstances and career paths in different countries (Spain, Portugal, USA)	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Spatial statistics (Lecture,Exercise,Seminar) *Contents*: The course consists of two major parts, i.e. a lecture as well as an eLearning module. The parts complement each other and are both essential for the course. During the lecture, the statistical background is introduced. The eLearning module demonstrates how to apply methods taught during the lecture to scientific questions and real-world data sets from all around the world. During the lecture, students are introduced to statistical methods of spatial point pattern analysis. Among others, this includes methods to describe first-order (intensity of point patterns) and second-order properties of patterns (K-, g- and 0-functions, mark-correlation functions), as well as methods to simulate null model data using Monte-Carlo simulations of point process models. All methods include tools for homogenous and heterogenous conditions. The lecture also includes a practical part, in which students are taught how to use recent software to analyze own and/or sample data sets (*Programita* and/or *R*). In the eLearning module, international experts introduce the students to different ecosystems in different regions of the world and representative investigations. This includes methods of data sampling, data analysis, interpretation and presentation of results. In cases where the data is available, students are advised to reproduce the investigations. With regard to the oral exam they are encouraged to prepare a case study using and interpreting data from other countries. The international dimension is further strengthened by interviews with the experts, giving insights into the career and the general work circumstances in the corresponding home countries.	4 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination prerequisites:** Written exam (30 minutes)	6 C

Examination requirements: To successfully complete the course, students have to demonstrate a general understanding of how to develop ecological questions and translate them into a protocol for statistical testing; to understand and implement advanced methods of spatial data analysis; to conduct, document and present own data collection and spatial data	

analysis; to identify local ecological conditions (species properties, environmental conditions) and to discuss their potential effects on spatial point patterns; to interpret and discuss current ecological literature on spatial data analysis. The written exam (examination prerequisite) will take place in the first half of the semester.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module M.FES.726: Ecological Modelling with C++**	6 C 4 WLH

Learning outcome, core skills: • Implementing ecological questions in model structures • Independently develop simulation models • Programming with C++ • Proficiency in the use of software dedicated to programming C++ • Commenting and documenting program code	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecological modelling with C++ (Lecture,Exercise) *Contents*: The module conveys advanced knowledge of modelling ecological questions. The focus is on the implementation of ecological models with the programming language C++. The module covers the fundamentals of C++ to the degree necessary for the implementation of models. Programming skills are applied in an independent modelling project implementing an own model question. The modelling project is documented in the term paper.	4 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: Develop ecological questions and translate them into model structures; Read and understand C++; implement model independently.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module M.FES.727: Fungal Biotechnology and DNA Techniques**	6 C 4 WLH

Learning outcome, core skills: Fungal biotechnology Students will be introduced into fungal isolation and culturing, DNA isolation, fungal enzyme production, environmental applications of fungal enzymes such as in wood composite production Forest genetics Students will be introduced into basic DNA marker techniques and concepts of ecological genetics. The relevance of genetic variation for the conservation of forest genetic resources is highlighted.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Fungal biotechnology (Exercise)	3 WLH
Course: Forest genetics (Lecture)	1 WLH
Examination: Term Paper (max. 20 pages)	6 C

Examination requirements: The students have to learn experimental laboratory techniques and analyze the resulting data.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ursula Kües
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.FES.728: Tropical Dendrology**	3 C 2 WLH

Learning outcome, core skills: Tropical Dendrology objectives: Assessment of ecological characteristics and management of major tree species. Students will learn how to give an oral presentation.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Tropical Dendrology (Lecture,Exercise) *Contents*: In the tropical rainforest 50-60.000 tree species occur. Of course, it is not possible to know all of them including their ecological characteristics. However, in the course on Tropical dendrology we will present important families to which tropical trees belong. Furthermore, we will elaborate physiological principles with respect to water, carbon and nutrient turnover by trees, and focus on the possibilities of a functional classification of trees. For selected tree species we will analyse the ecological characteristics, management options and the use in more detail. *Course frequency:* each winter semester	2 WLH
Examination: Oral presentation (approx. 15 minutes) with written outline (max. 5 pages)	3 C

Examination requirements: Knowledge of ecological aspects and management options for tropical tree species. Analysis, presentation and discussion of specific species (groups).	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ralph Mitlöhner
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.FES.731: Bioenergy Management and Engineering**	6 C 4 WLH

Learning outcome, core skills: The students will learn fundamental concepts of conversion processes for municipal and industrial waste, non-woody and woody biomass. They will also get a basic understanding of related technologies, e.g. harvesting, transport and storage. They will be able to assess different technologies with respect to strengths and weaknesses. Furthermore, the students will learn to assess the potentials of waste / biomass production and logistics. The students will practice how to apply essential information in a management process and to present the results in written and oral form.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Bioenergy Management and Engineering (Lecture) *Contents*: The module will introduce the most relevant energy conversion technologies related to municipal and industrial waste products, non-woody and woody biomass. In addition, aspects of production/abundance, harvesting, logistic, and storage of non-woody and woody biomass, as well as municipal and industrial waste will be addressed. Chemical engineering aspects of conversion processes such as: • torrefaction, pyrolysis • gasification, BtL • combustion • biogas • biodiesel • bioethanol are given in the frame of the module. Advantages and disadvantages of these processes will be discussed in terms of biomass resources, production technology, product characteristics, and emissions. A group work that comprises a management and technology concept for a selected place/technology will allow the students to apply their knowledge and to investigate their project's feasibility. Literatur: Given during classes	4 WLH
Examination: Presentation (aprox. 20 min.) with written outline (max. 20 pages) **Examination prerequisites:** written examination (30 min)	6 C

Examination requirements: Preexamination Performance: Knowledge on the whole bioenergy production chain from raw material to energy: Raw material, Conversion technologies, Energy utilization Examination: Group report: Written presentation of group project from raw material acquisition to sensitivity study of the projects break even Group presentation: Oral presentation of group work with subsequent discussion	

Admission requirements:	**Recommended previous knowledge:**
none	

	Specific vocabulary Forestry, Chemical Engineering Skills
Language: English	**Person responsible for module:** Dr. Sebastian Paczkowski
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.FES.733: Exercises in Forest Monitoring**	6 C 4 WLH

Learning outcome, core skills: The students shall learn to design, to implement, to document and to cause forest inventory projects autonomously and on a scientific basis. Further on, they shall develop the abilities to optimize and to develop measuring methods related to forests. Therefore, it is crucial to handle common measuring instruments and methods safely.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Exercises in Forest Monitoring (Lecture,Exercise) *Contents*: • Short repetition about the use of instruments for measuring DBH, upper diameters and heights. • Planning, preparation and implementation of a sample based forest inventory, including the designing of an inventory instruction. • Data management (Excel) and analysis after given tasks. • Formulating a project report. • Presentation of results in small groups within a seminar for examination.	4 WLH
Examination: Oral presentation (approx. 15 minutes, 25%) with written outline (max. 15 pages, 75%)	6 C

Examination requirements: The students shall give evidence that they know how to plan, implement and analyse a forest inventory. Such experience will be accumulated during the practical exercises. This includes • design planning regarding sampling and plot design; • formulation / improvement of a forest inventory field manual; • data analyses and working on pre-defined questions and hypotheses; • Presentation of inventory results and defending them against criticism. The weighting will be done according to the reached points.	

Admission requirements: none	**Recommended previous knowledge:** Good command of forest mensuration and forest inventory, including calculation skills regarding analyses of inventory data.
Language: English	**Person responsible for module:** Prof. Dr. Christoph Kleinn
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 12	

Additional notes and regulations:
This module cannot be take by students who successfully completed M.FES.711.

Georg-August-Universität Göttingen **Module M.FES.734: Agroforestry Design Course**	6 C 4 WLH

Learning outcome, core skills: Acquiring knowledge to design an agroforestry system. The gained knowledge will be applied for own design work in groups, in cooperation with real farms that aim to plant agroforestry systems. This course is for students who aim to implement agroforestry in the field as farmers or as agroforestry consultants.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agroforestry Design Course (Lecture,Excursion,Seminar) *Contents*: Learn about different agroforestry systems, historic developments, design processes, analysis of local conditions, (social) context, complexity, geography and water management, soil and plants, tree spacing and management, economy and marketing and map design. Two short excursions are included.	4 WLH
Examination: Presentation (approx. 10 minutes) with written outline (max. 5 pages)	6 C

Examination requirements: Agroforestry design as a group work of approx. 3 students. Presentation and report to explain and embed the design in scientifically sound contexts, as learned in the course	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge on Agroforestry
Language: German	**Person responsible for module:** Franziska Leonie Gaede
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Geg.08a (IMSOGLO): Field course on human-environment interactions**	6 C 7 WLH

Learning outcome, core skills:	**Workload:**
The students have an integrative perspective on human-environment systems in various landscapes of central and southern Europe, which they explore during the field course. They understand the interlinkages “Geology/Geomorphology - Climate/Paleoclimate - Vegetation - Soils - Development of adapted human land-use systems - potential effects of Global Change” for these landscapes. This concept is extended to landscapes in different parts of the world, as each IMSOGLO student introduces a landscape of his/her home country to the group according to the above scheme of interlinkages in the evenings of the field course. The participants reflect on the diverse human-environment systems and share their perspectives with the international excursion group. These evening discussions raise the awareness that each perspective is influenced by a certain sociocultural background, and that different perspectives may be equally appreciated. Thus, they lead to a more global and self-reflexive perspective of the participants.	Attendance time: 98 h Self-study time: 82 h

Course: Field course (14 days) (Course)	7 WLH
Examination: DIN A 0 poster, to be presented during the field course (approx. 15 min.) **Examination prerequisites:** Regular participation in field course.	6 C

Examination requirements:	
The students proof that they understand and are able to explain present the following interlinkages in their landscape: “Geology/Geomorphology - Climate/Paleoclimate - Vegetation - Soils - Development of adapted human land-use systems - potential effects of Global Change” for a landscape in their home country.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Daniela Sauer
Course frequency: Every second year in March	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Geg.18: Earth surface dynamics and associated hazards**	6 C 4 WLH

Learning outcome, core skills: The students understand past, present and future landscape dynamics, their natural and human drivers, path-dependent processes and scale-dependent impacts. They know how to identify relevant Earth surface dynamics and associated hazards from the geological, geomorphological, hydrological and ecological configuration of a landscape. The students can apply suitable methods to analyze a landscape through field mapping and (geo-)statistical data analyses. They are able to use theoretical and data-based knowledge to identify path-dependencies and dynamics that act across different spatial and temporal scales. They can develop strategies to inform regional land management and to anticipate and mitigate future environmental and resource crises.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Earth surface dynamics and challenges in managing associated hazards (Lecture,Seminar)	2 WLH
Course: Practical course Earth surface dynamics (Exercise)	2 WLH
Examination: Presentation (approx. 20 min.) with term paper (15 pages max.) OR presentation (approx. 20 min.) with oral exam (approx. 20 min.) **Examination prerequisites:** Presentation (c. 15 min) in the practical course	6 C

Examination requirements: The students prove that they understand past, present and future landscape dynamics, their natural and human drivers, path-dependent processes and scale-dependent impacts. They demonstrate that they can identify relevant Earth surface dynamics and associated hazards from the geological, geomorphological, hydrological and ecological configuration of a landscape. The students show that they are able to use theoretical and data-based knowledge to identify path-dependencies and dynamics that act across different spatial and temporal scales. They prove that they can develop strategies to inform regional land management and to anticipate and mitigate future environmental and resource crises.	

Admission requirements: None	**Recommended previous knowledge:** None
Language: English, German	**Person responsible for module:** Prof. Dr. Elisabeth Dietze
Course frequency: once a year	**Duration:** 1-2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 20	

Additional notes and regulations:

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Georg-August-Universität Göttingen **Module M.Geo.102: Geodynamics II**	6 C 6 WLH

Learning outcome, core skills: The course aims at a deep understanding of the physical and chemical processes that shape the Earth's mantle and crust. This will be based on the petrology, phase stability and thermodynamics of deep-Earth minerals as a function of pressure, temperature and composition. Modern concepts of mantle petrology based on water contents, phase transitions equation of state, experimental data, and seismic information about the structure of the Earth's mantle will be presented. Earth's mantle-crust evolution scenarios - including cosmochemical data - will be discussed on the basis of chemical geodynamics, trace element and isotopic composition of crust and mantle rocks. Selected case studies serve to deepen the understanding of the dynamics of Earth geochemical compartments.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Petrological Evolution of the Earth (Lecture,Exercise)	2 WLH
Course: Chemical Planetary Sciences - Case Studies (Lecture,Seminar)	2 WLH
Course: Isotope Geochemical Modeling (Exercise)	2 WLH
Examination: Written examination (120 min) or oral examination (approx. 30 min) **Examination prerequisites:** Class work and regular attendance in course 3	6 C

Examination requirements: Deep understanding of petrological and isotope geochemical concepts and their application to prevalent questions in Earth and Planetary Sciences. Ability to scrutinize common models, quantify problems, hypothesize, design relevant tests and formulate theories.	

Admission requirements: none	**Recommended previous knowledge:** Isotope geology, geochemistry and petrology modules at Bachelor level
Language: English, German	**Person responsible for module:** Prof. Dr. Sharon Webb Prof. Dr. Matthias Willbold
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 65	

Georg-August-Universität Göttingen **Module M.Geo.103: Global change**	6 C 6 WLH

Learning outcome, core skills: The module provides a coherent insight into the major development phases of the geo-biosphere with its complex interactions. The causes and effects of Global Change since the Archaic are presented and discussed. The "Critical Intervals of Earth History" event focuses on those phases / events in the Earth's history that have changed the conditions in the Earth system in a sustainable way, decisively influencing the dynamics of evolution, the geo-biosphere, and the development of ecosystems. In the event "Climate and Glaciation", the relationships between climate and icing in the course of Earth's history are presented; The focus is on the recent geological past. Furthermore, it shows which climate information is contained in ice cores and how this information can be obtained. The event "Proxies and biosignatures" deals with (bio) geochemical archives, which can be used to detect and trace global processes of change, in particular stable isotope systems, petrographic findings and organic geochemical markers.	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: Critical intervals of geological history (Lecture,Seminar)	2 WLH
Examination: Seminar lecture followed by discussion (about 20 min. in total) or term paper (max. 5 pages). **Examination requirements:** The students have knowledge about important development phases and cuts in the geo-biosphere, as well as their causes.	2 C

Course: Proxies und Biosignatures (Lecture,Seminar)	2 WLH
Examination: Seminar lecture followed by discussion (about 20 min. in total) or term paper (max. 5 pages). **Examination requirements:** Students know the methods with which global change processes can be identified and traced, in particular stable isotope systems as well as petrographic findings and organic geochemical markers in (bio-) geochemical archives.	2 C

Course: Climate and Glaciation (Lecture,Seminar)	2 WLH
Examination: Seminar lecture followed by discussion (about 20 min. in total) or term paper (max. 5 pages). **Examination requirements:** Interaction of climate and glaciation. Information from ice cores.	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Volker Thiel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	from 1
Maximum number of students: 65	

Georg-August-Universität Göttingen **Module M.Geo.104: Regional Geology**	6 C 6 WLH

Learning outcome, core skills: This module enables students to understand the links between the geologic evolution of individual regions and their plate tectonic framework. Case studies are presented from different settings such as rifts, subduction zones and Cordilleran orogens, collisional orogens, strike-slip plate boundaries and intraplate orogens. It is shown how stratigraphic, sedimentologic, structural, petrologic, geochemical, seismologic, geodetic and other data can be combined to unravel a region´s geologic history. Students will learn how to create and critically assess hypotheses linking field observations and lab data to plate tectonic observations and concepts.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Case studies in regional geology (Lecture) *Course frequency:* each winter semester	2 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Students know fundamental characteristics of the presented case studies and understand how the history of these regions relates to key concepts of plate tectonics and its geologic expressions.	2 C

Course: Regional geology excursion (Field course) Field excursion with a focus on regional geology, 8 days minimum duration, plus mandatory introduction seminar.	4 WLH
Examination: Seminar presentation (approx. 15 minutes + 5 minutes discussion) or term paper (10 pages max.), not graded **Examination requirements:** Students can present and explain geologic characteristics of the excursion´s target region on a plate tectonic and regional geologic background	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Jonas Elmar Kley
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 65	

Georg-August-Universität Göttingen **Module M.Geo.125: Stable Isotopes - Advanced Course**	6 C 6 WLH

Learning outcome, core skills: Students are trained in the working methods of the chemistry of stable isotopes. In-depth discussion of case studies combined with project work should enable students to formulate concepts for the use of stable isotopes in different contexts (cosmochemistry, geology, applied mineralogy). Furthermore, the students will learn theory, laboratory technology and mass spectrometry in practical exercises.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Stable Isotopes - Advanced Course (Lecture) *Course frequency:* each summer semester	2 WLH
Course: Sample preparation (Exercise)	2 WLH
Course: Mass spectrometry (Exercise)	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** Housework (10 pages max.), regular participation in the exercises.	6 C

Examination requirements: Preparation for the analysis of stable isotopes, performance of analytical work, evaluation of data, understanding of theoretical concepts, computational exercises and case studies on the chemistry of stable isotopes.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Andreas Pack
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 10	

Additional notes and regulations: Compulsory module for the certification of the specialization in Geochemistry

Georg-August-Universität Göttingen **Module M.Geo.138: Structural modelling**	6 C 6 WLH

Learning outcome, core skills: This module comprises two topics: (1) Geometrical modelling of structures with a focus on cross-section balancing and (2) evolution of fractures and fracture-controlled fluid transport in reservoirs. In topic (1) the principles of structural modelling in 2D (cross-sections and map-view block mosaics) are explained and explored in practical exercises using pencil and paper as well as specialized software (Move). Students will acquire the basis for later expanding their expertise in structural modelling on their own. In topic (2) lectures, combined with exercises, group work and a short field trip give insight into fluid flow in rocks, formation of fractures and fracture systems, and fluid flow in fractured reservoirs (for petroleum, gas, ground- and geothermal water). The students shall also understand how reservoirs may be stimulated and know how reservoir rocks and their fracture systems are analysed and interpreted.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Structural Modelling (Lecture)	1 WLH
Course: Exercises in Structural Modelling (Exercise)	3 WLH
Course: Fractured Reservoirs (Lecture,Exercise)	2 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** Regular participation in Lecture 2 and completion of exercises	6 C

Examination requirements: Basic knowledge of different methods and algorithms in cross-section balancing and their applications. Knowledge of fracture formation and fluid flow in fracture-controlled reservoirs including techniques of reservoir exploration and stimulation.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Jonas Elmar Kley Dr. David Hindle
Course frequency: each summer semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Geo.142: Melts and glasses**	6 C 5 WLH

Learning outcome, core skills: The relationships between the physical/chemical properties and the structure of natural and technical melts are discussed. In the lecture part, the melting properties and the experimental measurements are presented, while measurements of the melting properties are carried out independently in the practical part. The application and production of technical glasses as well as the properties and technical applicability of natural glasses are explained in the lecture part and underpinned by experiments and factory tours in the practical part	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: Rheologie von Silikatschmelzen (Lecture,Exercise)	2 WLH
Course: Schmelzen (Lecture,Exercise)	3 WLH
Examination: Term Paper (max. 20 pages) **Examination prerequisites:** Regelmäßige Teilnahme an der Übung zu LV 2	6 C

Examination requirements: Physical properties of melts and glasses, structure of melts, experimental investigations on melts	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Sharon Webb Dr. rer. nat. Kirsten Techmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 25	

Additional notes and regulations: Compulsory module for the certification of the specialization in Geomaterials

Georg-August-Universität Göttingen **Module M.Geo.144: Electron microscopy**	6 C 4,5 WLH

Learning outcome, core skills: The scanning electron microscope (SEM) is a common analytical instrument for scientific and industrial applications characterizing textures, microstructures and chemical variations of samples on the nm to cm scale. In this course, students will refresh the theory and principles of the SEM technique and gain hands-on experiments in sample preparation as well as instrument operation using a variety of geological and industrial samples. Students will be trained on qualitative and quantitative data acquisition using different instrument detectors such as SE, BSE, EDS, and EBSD. Data processing and extraction of quantitative information such as modal abundance, element zoning, grain size orientation and grain size distribution will be practiced. At the end of the course, students will: 1) Have a conceptual understanding of the instrument and the different analytical methods using different detectors, 2) Have the ability to handle the instrument and perform standard data acquisition, 3) Have developed an awareness of data quality as a function of instrument parameters, 4) Have the ability to post-process datasets to extract qualitative and quantitative information	**Workload:** Attendance time: 63 h Self-study time: 117 h

Course: Scanning electron microscopy (SEM) as analytical method (Lecture)	1 WLH
Course: SEM: Sample Data acquisition, processing and interpretation (Exercise)	3,5 WLH
Examination: Bericht (max. 15 pages) **Examination prerequisites:** Continous participation in practical sessions	6 C

Examination requirements: Theoretical knowledge of electron microscopy as analytical tool and ability to perform standard data processing and interpretation	

Admission requirements: keine	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Thomas Müller Dr. Kirsten Techmer
Course frequency: each winter semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students:	

10	

Georg-August-Universität Göttingen **Module M.Geo.151: Basics in Hydrogeology**	6 C 6 WLH

Learning outcome, core skills: This module is intended to convey the fundamentals of the theory of groundwater flow and transport and to apply them in practical exercises in the field and in the laboratory. The students should be able to organise and conduct test procedures as well as to assess the specific hydrogeological site conditions. The contents of the module comprise the hydrological water balance, groundwater recharge estimation techniques, groundwater hydrology, pumping test evaluation and principles of solute transport. Relevance of this fundamental material is illustrated with examples from the hydrogeological practice, e.g. water resources exploration, and groundwater remediation. The advanced course will concentrate on the specifics of fractured aquifers and the particulars of the large variety of aquifer systems in Northern Germany. They can be regarded as representative for a large number of aquifer types.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Hydrogeology (Lecture,Exercise) *Contents*: Lehrende: M. Sauter, J. Kordilla *Course frequency:* each winter semester	3 WLH
Course: Hydrogeological Seminar (Seminar) *Course frequency:* each semester	1 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** Participation in the Hydrogeological Seminar	4 C

Course: Hydrogeologische Systeme (Excursion) *Contents*: Lehrender: Sauter *Course frequency:* each summer semester	2 WLH
Examination: Report (max. 10 pages)	2 C

Examination requirements: Theory and practice of groundwater flow and solute transport processes, implementation in the field.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Martin Josef Sauter Dr. Jannes Kordilla
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	from 1
Maximum number of students: 15	

Additional notes and regulations:
Compulsory module for the certification of the specialization in Hydrogeology.

Georg-August-Universität Göttingen **Module M.Geo.153: Hydrogeological Investigation Methods**	6 C 6 WLH

Learning outcome, core skills: The course focuses on innovative investigation and monitoring techniques. Both integral and high resolution point scale, non-invasive and invasive investigation techniques are presented, and scale-heterogeneity relationship issues are discussed. Innovative equipment providing access to the subsurface, innovative tools allowing groundwater sampling and parameter estimation, innovative subsurface measuring, investigation, characterization and monitoring methods, strategies and approaches.	**Workload:** Attendance time: 70 h Self-study time: 110 h

Course: Investigation Techniques and Monitoring (Lecture,Exercise) *Course frequency:* each winter semester	2 WLH
Examination: Written examination (60 minutes)	2 C

Course: Well Design and Construction (Lecture) Lecturer: Prof. Dr. Hu Rui. The lecture will be held as a block course. *Course frequency:* each winter semester	1 WLH
Examination: Written examination (30 min.) or oral exam (approx. 30 min.)	1 C

Course: Advanced Hydrogeological Investigation Techniques (Lecture) Lecturer: Dr. Ralf Brauchler. The lecture will be held as a block course. *Course frequency:* each summer semester	1 WLH
Examination: Written examination (30 min.) or oral exam (approx. 30 min.)	1 C

Course: Field Exercise Hydrogeology (Exercise) *Course frequency:* Block course after the lecture period in the summer semesterjedes Sommersemester	2 WLH
Examination: Term Paper (max. 10 pages)	2 C

Examination requirements: Theory and practical application of hydrogeological investigation and monitoring techniques	

Admission requirements: basic knowledge in hydrogeology and mathematics	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr.-Ing. habil. Thomas Ptak-Fix
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students:	

15	

Additional notes and regulations:
Compulsory module for the certification of the specialization in hydrogeology.

Georg-August-Universität Göttingen **Module M.Geo.247: Petrology Project**	6 C 3 WLH

Learning outcome, core skills: In diesem Praktikum sollen in weitgehend selbständiger Arbeit Themen aus dem Bereich der metamorphen und experimentellen Petrologie sowie der angewandten Mineralogie als Projekt in Gruppenarbeit geplant und durchgeführt werden. Durch sinnvolle Kombination mehrerer gängiger Methoden sollen so natürliche petrologische sowie technische Prozesse nachvollzogen und dokumentiert werden. Ergänzt wird das Praktikum durch Arbeit mit einschlägiger Literatur. Im begleitenden Seminar soll vertiefende Hintergrundinformation gebracht werden; außerdem sollen ausgewählte Fragestellungen o.g. Projekte in der Gruppe diskutiert werden.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Petrologisches Praktikum (Lecture,Exercise)	2 WLH
Course: Mineralogie-Petrologie Seminar (Seminar)	1 WLH
Examination: Oral Presentation/ Posterpräsentation (approx. 15 minutes) **Examination prerequisites:** aktive Teilnahme an Seminar und Übungen	6 C

Examination requirements: Selbständiges Arbeiten in dem Bereich der metamorphen und experimentellen Petrologie inklusive Literaturrecherche und Präsentationen in Form wissenschaftlicher Vorträge	

Admission requirements: keine	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Thomas Müller
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module M.Geo.255: Applied Geology Project**	6 C 1 WLH

Learning outcome, core skills: The aim of this module is to introduce the students to procedures of scientific work as well as writing and presenting in science. This comprises (1) how to obtain scientific data, (2) how to organize and summarize the relevant information in a report, and finally (3) how to provide a clear and concise oral presentation of the report. Students can either choose an assigned project (laboratory/field work, programming/numerical modeling) or a literature research as a basis for their report and oral presentation. Furthermore the students will have to participate in the weekly seminar of the Applied Geology department. The topic of the report and presentation should be related to one of the research and teaching activities of the department and will be assigned according to the field of work of the responsible supervising tutor.	**Workload:** Attendance time: 14 h Self-study time: 166 h

Course: Hydrogeological Seminar (belongs to M.Geo.151.2) (Seminar) *Course frequency:* each summer semester	1 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** 12 participations in the weekly seminar in M.Geo.151.2 of the Applied Geology department.	6 C

Examination requirements: The students know how to obtain scientific data in topics of applied. They can organize and summarize the relevant information in a report, and finally they know how to provide a clear and concise oral presentation of the report. Oral presentation in the weekly seminar of the Applied Geology department.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Staff of the Department Applied Geology
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module M.Inf.1114: Algorithms on Sequences**	5 C 4 WLH

Learning outcome, core skills: We expect that the participants will gain an understanding of classical string-processing tools. They are supposed to understand and be able to use in various situations: classical text algorithms (e.g., pattern matching algorithms, edit distance), classical text indexing data structures (e.g., suffix arrays / trees), and classical combinatorial results that are useful in this context (e.g., periodicity lemmas).	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Algorithms on Sequences (Lecture,Exercise) *Contents*: This course is an introduction into the theory of stringology, or algorithms on sequences of symbols (also called words or strings). Our main intention is to present a series of basic algorithmic and combinatorial results, which can be used to develop efficient word-processing tools. While the emphasis of the course is on the theoretical side of stringology, we also present a series of applications of the presented concepts in areas like data-compression or computational biology The main topics our course will cover are: basic combinatorics on words, pattern matching algorithms, data structures for text indexing (suffix arrays, suffix trees), text compression (Huffman encoding, Lempel-Ziv method), detection of regularities in words, algorithms for words with don't care symbols (partial words), word distance algorithms, longest common subsequence algorithms, approximate pattern matching. The presentation of each theoretical topic from the above will be accompanied by a brief discussion on its possible applications. Literature • T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein: Introduction to Algorithms (3rd Edition), MIT Press, 2009. • M. Crochemore, C. Hancart, T. Lecroq: Algorithms on Strings, Cambridge University Press, 2007. • M. Crochemore, W. Rytter: Jewels of Stringology, World Scientific, 2002. • D. Gusfield. Algorithms on strings, trees, and sequences: computer science and computational biology. Cambridge University Press, 1997.	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** basic combinatorics on words, pattern matching algorithms, data structures for text indexing (suffix arrays, suffix trees), text compression (Huffman encoding, Lempel-Ziv method), detection of regularities in words, algorithms for words with don't care symbols (partial words), word distance algorithms, longest common subsequence algorithms, approximate pattern matching	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Florin-Silviu Manea
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1115: Advanced Topics on Algorithms**	5 C 4 WLH

Learning outcome, core skills: We expect that the students will become familiar with efficient sorting and searching methods, advanced data structures, dynamic data structures, as well as other efficient algorithmic methods, they will be able to estimate the complexity of those algorithms, and they will be able to apply those algorithms to particular programming problems (from practical or theoretical settings).	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Advanced Topics on Algorithms (Lecture,Exercise) *Contents*: In this course we present a series of selected results on data structures and efficient algorithms, and discuss a series of areas in which they can be applied successfully. The emphasis of the course is on the theory, we also approach the problem of a practical implementation of the presented algorithms. The main topics our course will cover are: efficient sorting and searching (non-comparison based methods, van Emde Boas trees, Radix Sort), advanced tree-structures (Fibonacci heaps, B-Trees, structures for working with disjoint sets), dynamic data structures (range minimum queries, lowest common ancestor, applications to string algorithms: suffix arrays, suffix trees), Hashing and Dictionaries, Young tableaux, geometric algorithms (convex hull), number theoretic algorithms. The presentation of each theoretical topic from the above will be accompanied by a brief discussion on its possible applications. Literature • T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein: Introduction to Algorithms (3rd Edition), MIT Press, 2009. • E. Demaine: Advanced Data Structures, MIT Course nr. 6.851, 2012. • Pawel Gawrychowski and Mayank Goswami and Patrick Nicholson: Efficient Data Structures, MPI Course, Summer 2014.	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** efficient sorting and searching (non-comparison based methods, van Emde Boas trees, Radix Sort), advanced tree-structures (Fibonacci heaps, B-Trees, structures for working with disjoint sets), dynamic data structures (range minimum queries, lowest common ancestor, applications to string algorithms: suffix arrays, suffix trees), Hashing and Dictionaries, Young tableaux, geometric algorithms (convex hull), number theoretic algorithms	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Florin-Silviu Manea
Course frequency:	**Duration:**

irregular	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1120: Mobile Communication**	5 C 3 WLH

Learning outcome, core skills: On completion of the module students should be able to: • explain the fundamentals of mobile communication including the use of frequencies, modulation, antennas and how mobility is managed • distinguish different multiple access schemes such as SDMA (Space Division Multiple Access), FDMA (Frequency Division Multiple Access), TDMA (Time Division Multiple Access), CDMA (Code Division Multiple Access) and their variations as used in cellular networks • describe the history of cellular network generations from the first generation (1G) up to now (4G), recall their different ways of functioning and compare them to complementary systems such as TETRA • explain the fundamental idea and functioning of satellite systems • classify different types of wireless networks including WLAN (IEEE 802.11), WPAN (IEEE 802.15) such as Bluetooth and ZigBee, WMAN (IEEE 802.16) such as WiMAX and recall their functioning • explain the challenges of routing in mobile ad hoc and wireless sensor networks • compare the transport layer of static systems to the transport layer in mobile systems and explain the approaches to improve the mobile transport layer performance • differentiate between the security concepts used in GSM and 802.11 security as well as describe the way tunnelling works	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Mobile Communication (Lecture,Exercise)	3 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Fundamentals of mobile communication (frequencies, modulation, antennas, mobility management); multiple access schemes (SDMA, FDMA, TDMA, CDMA) and their variations; history of cellular network generations (first (1G) up to current generation (4G) and outlook to future generations); complementary systems (e.g. TETRA); fundamentals of satellite systems; wireless networks (WLAN (IEEE 802.11), WPAN (IEEE 802.15) such as Bluetooth and ZigBee, WMAN (IEEE 802.16) such as WiMAX); routing in MANETs and WSNs; transport layer for mobile systems; security challenges in mobile networks such as GSM and 802.11 and tunneling;	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in telematics and computer networks
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1121: Specialisation Mobile Communication**	5 C 3 WLH

Learning outcome, core skills: On completion of the module students should be able to: • recall the basic terms and definitions of wireless ad hoc networks, their history and name their basic application areas • describe the special characteristics of the physical layer of wireless ad hoc networks • differentiate the various media access control (MAC) schemes as used in wireless ad hoc networks; and name their challenges • explain the network protocols used in wireless ad hoc networks, reason the design decisions taken in this context as well as classifying and comparing the different existing routing protocol approaches • identify the energy management issues in wireless ad hoc networks and classify existing energy management schemes • describe security challenges in ad hoc networks, threats and attacks and corresponding security solutions such as cryptography schemes, key management, secure routing protocols and soft security mechanisms • discuss the challenges on the transport layer in wireless ad hoc and sensor networks, compare them to existing protocols, classify them and discuss enhancements of TCP for wireless ad hoc networks • describe the challenges of wireless sensor networks (WSN) and explain the differences to wireless ad hoc networks • memorize the WSN architecture and topology, the used operating systems and the existing hardware nodes • discuss the optimization goals in WSNs, the used MAC protocols as well as the utilised naming and addressing schemes; additionally, describe the used approaches for time synchronization, localization and routing	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Wireless Ad Hoc and Sensor Networks (Lecture,Exercise)	3 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Terms, definitions and characteristics of wireless ad hoc networks; Network Layer used in wireless ad hoc networks (Physical, MAC, Network Layer, Transport, Application); Energy Management; Security Challenges, threats and attacks in wireless ad hoc networks and their counter measures (cryptographic schemes, key management, secure routing, soft security); architecture, topologies and characteristics of wireless sensor networks (WSNs) and the differences to ad hoc networks; WSN specifics (naming and addressing, synchronization, localization and routing)	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in telematics and computer networks
Language:	**Person responsible for module:**

English	Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1122: Seminar on Advanced Topics in Telematics**	5 C 2 WLH

Learning outcome, core skills: On completion of the module students should be able to: • critically investigate current research topics from the area of telematics such as bio-inspired approaches in the area of wireless communication or security attacks and countermeasures for mobile wireless networks • collect, evaluate related work and reference them correctly • summarize the findings in a written report • prepare a scientific presentation of the chosen research topic	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Security of Self-organizing Networks (Seminar)	2 WLH
Course: Bio-inspired Networking (Seminar)	2 WLH
Examination: Presentation (approx. 45 minutes) and written report (max. 20 pages) **Examination requirements:** The students shall show that • they are able to become acquainted with an advanced topic in telematics by investigating up-to-date research publications. • they are able to present up-to-date research on an advanced topic in telematics. • they are able to assess up-to-date research on an advanced topic in telematics. • they are able to write a scientific report on an advanced topic in telematics according to good scientific practice.	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in telematics and computer networks
Language: English	**Person responsible for module:** Dr. Parisa Memarmoshrefi
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1123: Computer Networks**	5 C 2 WLH

Learning outcome, core skills: The students • have gained a deeper knowledge in specific topics within the computer networks field • have improved their oral presentation skills • know how to methodically read and analyse scientific research papers • know how to write an analysis of a specific research field based on their analysis of state-of-the-art research • have improved their ability to work independently in a pre-defined context	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Advanced Topics in AI, Computing, and Networking (Seminar)	2 WLH
Examination: Präsentation (ca. 30 Min.) und Hausarbeit (max. 15 Seiten) **Examination requirements:** Knowledge in a specific field of mobile communication; Ability to present the earned knowledge in a proper way both orally and in a written report	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1124: Seminar Computer Networks**	5 C 2 WLH

Learning outcome, core skills: The students • have gained a deeper knowledge in specific topics within the computer networks field • have improved their oral presentation skills • know how to methodically read and analyse scientific research papers • know how to write an analysis of a specific research field based on their analysis of state-of-the-art research • have improved their ability to work independently in a pre-defined context	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar on Internet Technology (Seminar)	2 WLH
Examination: Präsentation (ca. 30 Min.) und Hausarbeit (max. 15 Seiten) **Examination requirements:** Knowledge in a specific field of internet technology; ability to present the earned knowledge in a proper way both orally and in a written report	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1129: Social Networks and Big Data Methods**	5 C 2 WLH

Learning outcome, core skills: The students • are familiar with basic concepts of social networks • know how to methodically read and analyse scientific research papers • have enriched their practical skills in computer science with regards to analysis of big data applications • have improved their ability to work independently in a pre-defined context • have improved their ability to work in diverse teams	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Social Networks and Big Data Methods (Exercise,Seminar)	2 WLH
Examination: Term Paper (max. 20 pages) **Examination prerequisites:** Erreichen von mindestes 50% der Übungspunkte **Examination requirements:** Basic knowledge in social networks and data analysis; ability to transfer the theoretical knowledge to practical exercises; ability to present the earned knowledge in a proper written report	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures; advanced programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1130: Software-defined Networks (SDN)**	5 C 3 WLH

Learning outcome, core skills: The students • are familiar with the concepts of software defined networking (SDN) • know how to methodically read and analyse scientific research papers • have enriched their practical skills in computer networks with regards to SDN • know about practical deployability issues of SDN • have improved their ability to work independently in a pre-defined context	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Software-defined Networking (Exercise,Seminar)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Achievement of at least 50% of the exercise points **Examination requirements:** Knowledge in software-defined networking; ability to transfer the theoretical knowledge to practical exercises; ability to present the earned knowledge	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures; advanced programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1138: Usable Security and Privacy**	5 C 4 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Understand the needs for usability in secure and privacy-preserving solutions and the associated challenges, • Present and discuss selected themes addressed in the research area of usable security and privacy, • Define and understand the principles and guidelines to apply when designing new solutions, • Describe and compare different methodologies to conduct user studies, • Plan user studies from their design to the processing and presentation of the results.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Usable Security and Privacy (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (ca. 20 min.) **Examination requirements:** Introduction to usable security and privacy, selected topics in the research field of usable security and privacy, human-computer interaction principles and guidelines, methods to design and evaluate usable solutions in the area of security and privacy.	5 C

Admission requirements: none	**Recommended previous knowledge:** Backgrounds in Computer Security and Privacy
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Inf.1139: Privacy-Enhancing Technologies**	5 C 4 WLH

Learning outcome, core skills: After successfully completing the module, students are able to: • Define and understand the basic concepts of privacy protection, • Identify and classify the different existing threats against privacy, • Define and understand the legal principles of data protection in Germany, the EU and worldwide, • Explain the principles of fundamental privacy-enhancing technologies as well as define and compare their protection goals, • Understand and analyze selected cutting-edge privacy-enhancing solutions.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Privacy-Enhancing Technologies (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min) or oral exam (approx. 20 min) **Examination requirements:** Privacy threats, data protection legal framework, anonymity, anonymization techniques and services, privacy-enhancing technologies, applied privacy protection.	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in communication networks, databases, and data processing.
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1150: Advanced Topics in Software Engineering**	5 C 3 WLH

Learning outcome, core skills: The students • gain knowledge about an advanced topic in software engineering. The advanced topic may be related to areas such as software development processes, software quality assurance, and software evolution • become acquainted with the status in industry and research of the advanced topic under investigation • gain knowledge about methods and tools needed to apply or investigate the advanced topic	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Construction of Reusable Software (Block course,Seminar) *Contents*: Topics which will be covered by lecture and associated seminar include • design patterns • frameworks • unit testing with the JUnit Framework • the Eclipse Framework • refactoring • design-by-Contract/Assertions • aspect-oriented programming (AOP)	3 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination requirements:** **Preliminary test** If the module is implemented by a lecture with exercises: • Development and presentation of the solution of at least one exercise (presentation and report) and active participation in the exercises If the module is implemented by a block lecture with an associated seminar: • Presentation of at least one topic in the associated seminar • Attendance in 80% of the seminar presentations **Exam** The students shall show knowledge about • the principles of the advanced topic under investigation • the status of the advanced topic under investigation in industry and research • the methods and tools for applying or investigating the advanced topic	5 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language:	**Person responsible for module:**

English	Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1152: Specialisation Softwareengineering: Quality Assurance**	5 C 3 WLH

Learning outcome, core skills: The students • can define the term software quality and acquire knowledge on the principles of software quality assurance • become acquainted with the general test process and know how it can be embedded into the overall software development process • gain knowledge about manual static analysis and about methods for applying manual static analysis • gain knowledge about computer-based static analysis and about methods for applying computer-based static analysis • gain knowledge about black-box testing and about the most important methods for deriving test cases for black-box testing • gain knowledge about glass-box testing and about the most important methods for deriving test cases for glass-box testing • acquire knowledge about the specialties of testing of object oriented software • acquire knowledge about tools that support software testing • gain knowledge about the principles of test management	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Software Testing (Lecture,Exercise)	3 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination prerequisites:** Develop and present the solution of at least one exercise (presentation and report) and active participation in the exercises. **Examination requirements:** The students have to show knowledge in software quality, principles of software quality assurance, general test process, static analysis, dynamic analysis, black-box testing, glass-box testing, testing of object-oriented systems, testing tools, and test management.	5 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1153: Specialisation Softwareengineering: Requirements Engineering**	5 C 3 WLH

Learning outcome, core skills: The students • can define the terms requirement and requirements engineering and acquire knowledge on the principles of requirements engineering • become acquainted with the general requirements engineering process and know how it can be embedded into the overall software development process • gain knowledge about the system context and context boundaries • gain knowledge about requirements elicitation techniques and the interpretation of elicitation results • gain knowledge about the negotiation of requirements with different stakeholders • gain knowledge about the structure of documents for the requirements documentation • gain knowledge about the requirements documentation in natural language and techniques for the use of structured natural language • gain knowledge about the requirements documentation with models and model-based techniques for requirements documentation • gain knowledge about the validation of requirements • gain knowledge about managing changes to requirements • gain knowledge about tracing requirements through a development process	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Requirements Engineering (Lecture,Exercise)	3 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination prerequisites:** Develop and present the solution of at least one excercise (presentation and report) and active participation in the exercise sessions. **Examination requirements:** Requirements, requirements engineering, general requirements engineering process, system context, system boundary, context boundary, requirements elicitation and interpretation, requirements negotiation, structure of requirements documentation, requirements documentation in natural language, model-based requirements documentation, requirements validation, requirements change management, requirements tracing.	5 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1154: Specialisation Softwareengineering: Software Evolution**	5 C 3 WLH

Learning outcome, core skills: The students • can define the term software evolution and acquire knowledge on the principles of software evolution and maintenance • become acquainted with general approaches for mining software repositories to understand, predict, and control the evolution of software • gain knowledge about typical data and data sources used in software evolution studies • gain knowledge about mining methods and tools for modeling, obtaining, and integrating data from software projects, including mining version control system data, mining issue tracking system data, mining static analysis data, mining clone detection data • gain knowledge about labelling and classification of artifacts and activities in software projects • gain knowledge about prediction, simulation, visualization, and other applications built upon mined software evolution data	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Software Evolution (Lecture,Exercise)	3 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination prerequisites:** Develop and present the solution of at least one exercise (presentation and report), active participation in the exercise sessions. **Examination requirements:** The students shall prove knowledge in the area of software evolution. This includes knowledge regarding principles of software evolution, software maintenance, software quality, mining software repositories, data mining, defect prediction, software clones, static analysis, dynamic analysis and human factors in software evolution.	5 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1155: Seminar: Advanced Topics in Software Engineering**	5 C 2 WLH

Learning outcome, core skills: The students • learn to become acquainted with an advanced topic in software engineering by studying up-to-date research papers. • gain knowledge about advanced topics in software engineering. The advanced topic may be related to areas such as software development processes, software quality assurance, and software evolution. • learn to present and discuss up-to-date research on advanced topics in software engineering. • learn to assess up-to-date research on advanced topics in software engineering.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar on Advanced Topics in Software-Engineering (Seminar) *Contents*: Topics which will be covered by this seminar can include • Usability and Usability-Engineering • User-oriented Usability Testing • Expert-oriented Usability Evaluation • Web-analytics • Information Architecture • SOA – Service-oriented Architecture • UML-Tools and Code Generation • Details of Specific Process Models • Model-driven Architecture • Usage-based Testing • Defect Prediction • Design Patterns • Agent-based Simulation • Reliability-Engineering for Cloud Systems	2 WLH
Examination: Presentation (approx. 45 minutes) and written report (max. 20 pages) **Examination prerequisites:** (1) Pitch Presentation (approx. 5 minutes); (2) Reviewable Draft of the Seminar Report (minimum 2 pages, maximum 5 pages); (3) Peer Review of a Fellow Student's Work (maximum 1 page) **Examination requirements:** The students shall show that • they are able to become acquainted with an advanced topic in software engineering by investigating up-to-date research publications. • they are able to present up-to-date research on an advanced topic in software engineering.	5 C

• they are able to assess up-to-date research on an advanced topic in software engineering. • they are able to write a scientific report on an advanced topic in software engineering according to good scientific practice. Presentation of an advanced topic in software engineering and written report.	

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1171: Cloud and Service Computing**	5 C 3 WLH

Learning outcome, core skills: Successfully completing the module, students understand • hybrid clouds, consisting of private and public clouds • basic web technologies (transfer protocols, markup languages, markup processing, RESTful and SOAP web services) • virtualization technologies (server, storage, and network virtualization) • data services (sharing, management, and analysis) • continuous integration/continuous delivery • container and orchestration in clouds (e.g. Kubernetes, OpenStack Heat) • monitoring of cloud infrastructures • interoperability in clouds (e.g. Helm) • portability and security • microservices • cloud computing workloads On completion of this module students will have a good understanding of the fundamental and up-to-date concepts used in the context cloud computing. This basic knowledge can be leveraged by students to design, implement, and manage service-oriented cloud infrastructures by themselves.	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Cloud and Service Computing (Lecture,Exercise) *Contents*: Cloud Computing is a method of providing shared computing resources, such as applications, computing, storage, networking, development, and deployment platforms. In cloud computing these resources can be delivered as service to the user. Such Service-oriented infrastructures are the backbone of modern IT systems. They pool resources, enable collaboration between people, and provide complex services to end-users. Everybody who uses today's web applications implicitly relies on sophisticated service-oriented infrastructures. The same is true for users of mobile devices such as tablet computers and smart phones, which provide most of their benefits leveraging services. The key challenges of cloud computing infrastructures are related to scaling services. More specifically large cloud-computing infrastructures require scalability of IT management, programming models, and power consumption. The challenges to scale services lie in the inherent complexity of hardware, software, and the large amount of user requests, which large-scale services are expected to handle. This module teaches methods that address and solve those challenges in practice. Key aspects of the module are the management of IT infrastructures, the management of service landscapes, and programming models for distributed applications. The module covers the virtualization of computing, storage, and network resources as the fundament for scaling. IT management is covered by the discussion of deployment	3 WLH

models, service level agreements. Programming models are covered by discussing RESTful and SOAP web-services. Both, lectures and exercises, keep a close connection to the practical application of the discussed topics. The practical value of service-oriented infrastructures is highlighted in the context of enterprises as well as in the context of science. The methods taught in this module benefit from the lecturers' experiences at GWDG and thus provide exclusive insights into the topic. After successfully attending these modules students will understand the most important aspects to design, implement, and manage internet-scale cloud computing infrastructures.	
Examination: Written exam (90 min) or oral exam (approx. 30 min) **Examination requirements:** • Hybrid and Multi cloud infrastructures • RESTful and SOAP web services • Compute, storage, and network virtualisation • Infrastructure-as-a-service, platform-as-a-service, software-as-a-service • Characteristics of Cloud computing (NIST) • Service life cycle • Service level agreements • Cloud computing workloads (e.g. batch, SaaS, big data, back-end)	5 C

Admission requirements: none	**Recommended previous knowledge:** • Basic programming skills • Basic knowledge of Linux operating systems
Language: English	**Person responsible for module:** Prof. Dr. Ramin Yahyapour
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1172: Using Research Infrastructures**	5 C 3 WLH

Learning outcome, core skills: Successfully completing the module, students • understand what methods and services are available in state-of-the-art research infrastructures and direction of future development • understand the infrastructures for eScience and eResearch • know basics of data management and data analysis • know the fundamental of technologies like cloud computing and grids • understand the real-world problems from different domains (e.g., high energy physics, humanities, medical science, etc.) which are tackled by research infrastructures • understand certain aspects, methods and tools of these infrastructures for different use cases from different domains • will be motivated to take part in other related modules (e.g., Specialization in Distributed Systems, Parallel Computing, etc.)	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Using Research Infrastructures - Examples from Humanities and Sciences (Lecture,Exercise) *Contents*: Successfully completing the lecture, students • understand the role and importance of the research infrastructure and their general building blocks • know the basics of grid computing • know the basics of cloud computing • learn basics on system virtualization • learn fundamental ideas of data management and analysis • understand the real-world problems from different domains (e.g., high energy physics, humanities, medical science/life science, etc.) which are tackled by research infrastructures • understand certain aspects, methods and tools of these infrastructures for different use cases from different domains • will be motivated to take part in other related modules (e.g., Specialization in Distributed Systems, Parallel Computing, etc.) • get familiar with real-world challenges through talks from experts who will present their current research activities and the role of research infrastructures on their research	3 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Grid computing; cloud computing; system virtualization; data management; data analysis; application of eResearch infrastructure in high energy physics; eResearch in medicine and life science; eResearch in humanities	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ramin Yahyapour
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1185: Sensor Data Fusion**	5 C 4 WLH

Learning outcome, core skills:	**Workload:**
This module is concerned with fundamental principles and algorithms for the processing and fusion of noisy (sensor) data. Applications in the context of navigation, object tracking, sensor networks, robotics, Internet-of-Things, and data science are discussed. After successful completion of the module, students are able to • define the notion of data fusion and distinguish different data fusion levels • formalize data fusion problems as state estimation problems • develop distributed and decentralized data fusion architectures • describe the basic concepts of linear estimation theory • explain the fundamental formulas for the fusion of noisy data • deal with unknown correlations in data fusion • understand the Bayesian approach to data fusion and estimation • formulate dynamic models for time-varying phenomena • describe the concept of a recursive Bayesian state estimator • explain and apply the Kalman filter for state estimation in dynamic systems • explain and apply basic nonlinear estimation techniques such as the Extended Kalman filter (EKF) and Unscented Kalman filter (UKF) • assess the properties, advantages, and disadvantages of the discussed (nonlinear) estimators • explain different approaches to deal with uncertainty such as probability theory, fuzzy theory, and Dempster–Shafer theory • identify data fusion applications and assess the benefits of data fusion	Attendance time: 56 h Self-study time: 94 h

Course: Sensor Data Fusion (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Definition of data fusion; data fusion levels; formalization of data fusion problems; distributed and decentralized fusion architectures; linear estimation theory; fundamental fusion formulas; dynamic state estimation; Kalman filter; Extended Kalman filter (EKF); Unscented Kalman filter (UKF), algorithms for dealing with unknown correlations; fuzzy theory; Dempster-Shafer theory	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1186: Seminar Hot Topics in Data Fusion and Analytics**	5 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students are able to • get acquainted with a specific research topic in the area of data fusion and data analytics • explain the considered problem in the chosen research topic • collect, evaluate, and summarize related work • describe solution approaches for the considered problem • discuss advantages and disadvantages of the proposed approaches • give an outlook to future research directions • prepare and give a presentation about the chosen research topic • write a scientific report about the chosen research topic • follow recent research in data fusion and data analytics	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Hot Topics in Data Fusion and Analytics (Seminar)	2 WLH
Examination: Presentation (approx. 45 minutes) and written report (max. 20 pages) **Examination prerequisites:** Attendance in 80% of the seminar presentations **Examination requirements:** Advanced knowledge of a specific research topic in the field of data fusion and data analytics; written scientific report; oral presentation	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1187: Simulation-based Data Fusion and Analysis**	5 C 4 WLH

Learning outcome, core skills: This module introduces fundamental simulation-based algorithms for the Bayesian fusion and analysis of noisy data sets. After completion, the students are able to • describe the Bayesian approach to data fusion and analysis • set up probabilistic state space models for time series data • describe the concept of a recursive Bayesian state estimator • employ Monte Carlo simulation for Bayesian inference • explain and apply sequential Monte Carlo methods, i.e., particle filters, such as Sequential Importance Sampling (SIS) and Sequential Importance Resampling (SIR) • explain and apply Markov Chain Monte Carlo (MCMC) methods such as Metropolis-Hasting and Gibbs sampling • describe the Bayesian interpretation of the Kalman filter • apply simulation-based implementations of the Kalman filter such as the Unscented Kalman Filter (UKF) and the Ensemble Kalman filter (EnKF) • employ Monte Carlo simulation for inference in probabilistic graphical models • explain Rao-Blackwellization and apply it to Simultaneous Localization and Mapping (SLAM) • assess the properties, advantages, and disadvantages of simulation-based techniques • apply the above concepts in the context of machine learning, computer vision, robotics, object tracking, and data science	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Simulation-based Data Fusion and Analysis (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Probabilistic state space models for time series data; recursive Bayesian state estimator; Monte Carlo simulation; Sequential Monte Carlo methods (particle filters); Sequential Importance Sampling (SIS) and Sequential Importance Resampling (SIR); Markov Chain Monte Carlo (MCMC) methods such as Metropolis-Hasting and Gibbs sampling; simulation-based implementations of the Kalman filter; Application of Monte Carlo simulation for inference in probabilistic graphical models; Rao-Blackwellization.	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1191: Privacy in Ubiquitous Computing**	5 C 4 WLH

Learning outcome, core skills: After successful completion of the module, students are able to: • Define and understand the key concepts of privacy and ubiquitous computing, • Identify and classify threats to privacy in ubiquitous computing, • Describe, compare, and choose fundamental techniques to protect privacy, • Understand and analyze cutting-edge solutions.	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Privacy in Ubiquitous Computing (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination prerequisites:** Active participation during the exercises. **Examination requirements:** Introduction to privacy and ubiquitous computing, privacy threats, privacy-enhancing technologies, wireless sensor networks, smart meters, participatory sensing, RFIDs, Internet-of-Things.	5 C

Admission requirements: none	**Recommended previous knowledge:** M.Inf.1120, M.Inf.1121
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1192: Seminar on Privacy in Ubiquitous Computing**	5 C 2 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Investigate selected topics in privacy in ubiquitous computing, • Identify existing solutions in the area to be investigated, • Explain, compare, and discuss these solutions, • Develop new ideas to improve the existing solutions, • Summarize their findings in a written report, • Give a presentation about the chosen area.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar on Privacy in Ubiquitous Computing (Seminar)	2 WLH
Examination: Presentation (approx. 30 minutes) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research on a topic in the area of privacy in ubiquitous computing, • They are able to explain selected solutions related to the chosen topic, • They are able to compare these solutions by analyzing their potential advantages and limitations, • They are able to write a structured scientific report on their findings by respecting the rules of good scientific practice, • They are able to present and to critically discuss their findings in a presentation. The examination includes a **seminar work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in privacy
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1193: Seminar on Usable Security and Privacy**	5 C 2 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Investigate a selected topic related to usability in the field of security and privacy, • Identify relevant publications to address this topic and survey the state-of-the-art, • Understand, present, and explain issues encountered by the users, • Develop and describe new ideas to address these issues, • Summarize their findings in a written report, • Give a presentation about their chosen topic.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar Usable Security and Privacy (Seminar)	2 WLH
Examination: Presentation (approx. 30 min.) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research on a topic in the area of usable security and privacy, • They are able to identify, understand, and explain usability issues encountered in this area, • They are able to propose novel solutions to these issues and discuss their potential advantages and limitations, • They are able to write a structured scientific report on their findings by respecting the rules of good scientific practice, • They are able to present and critically discuss their findings in a presentation. The examination includes a **seminar work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of privacy and usability obtained, e.g., in the recommended lecture “Usable Security and Privacy”
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1194: Seminar on Privacy in Data Science**	5 C 2 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Investigate selected topics on privacy in data science, • Identify existing solutions in the area to be investigated, • Explain, compare, and discuss these solutions, • Develop new ideas to improve the current state-of-the-art, • Summarize their findings in a written report, • Give a presentation about the chosen area.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar Privacy in Data Science (Seminar)	2 WLH
Examination: Presentation (approx. 30 min.) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research on a topic in the area of privacy in data science, • They are able to explain selected solutions related to the chosen topic, • They are able to compare these solutions by analyzing their potential advantages and limitations, • They are able to write a structured scientific report on their findings by respecting the rules of good scientific practice, • They are able to present and critically discuss their findings in a presentation. The examination includes a **seminar work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of privacy obtained, e.g., in one of the recommended lectures “Privacy-Enhancing Technologies”, “Privacy in Ubiquitous Computing”, “Usable Security and Privacy”, or “Ethical, Social, and Legal Foundations of Data Science”.
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1195: Seminar Human in the Age of Artificial Intelligence**	5 C 2 WLH

Learning outcome, core skills:	**Workload:**
This seminar investigates the relationship between Artificial Intelligence and automation and the human, the future of humanity, and ethical decision-making. This will be achieved by research and review of literature about the topic. On completion of this module students : • are familiar with the main concepts of the designed course and develop a greater awareness of the benefits and limitations of AI applications. • understand the role of artificial intelligence on Self and in Society. • are able to write a report demonstrating their understanding of the topic. • have improved their presentation skills on the selected topic. • have improved their ability to work independently in a pre-defined context.	Attendance time: 28 h Self-study time: 122 h

Course: Human in the Age of Artificial Intelligence (Seminar)	2 WLH
Examination: Presentation (approx. 45 minutes) and written report (max. 15 pages) **Examination requirements:** The students shall show that: • they are able to become acquainted with the topic of the designed course by investigating research publications • they are able to assess and analyze the research on the chosen topic • they are able to present and discuss their finding in a presentation • they are able to write a scientific report according to good scientific practice	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Parisa Memarmoshrefi
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1196: Object Tracking**	5 C 4 WLH

Learning outcome, core skills: This module introduces fundamental methods for the detection and tracking of (multiple) moving objects using environment sensors such as camera, lidar or radar devices. After completion of the course, the students are able to • describe different tracking concepts such as tracking-by-detection • extract object detections from visual, lidar and radar data • model the motion and measurement of moving objects • model the creation and termination of object tracks • apply vision-based and point cloud-based (multiple) object tracking algorithms • compare (multiple) object tracking methods based on scores such as Intersection-over-Union and MOTA/MOTP • solve data association problems, e.g. with the Hungarian or Auction algorithms • apply deep learning-based (multiple) object tracking methods, e.g., using transformers • apply probabilistic (multiple) object tracking algorithms such as the Multiple Hypotheses Tracker (MHT)	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Object Tracking (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Students need to achieve the learning goals	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1222: Specialisation Computer Networks**	5 C 2 WLH

Learning outcome, core skills: The students • have gained a deeper knowledge in specific topics within the computer networks field • have improved their oral presentation skills • know how to methodically read and analyse scientific research papers • know how to write an analysis of a specific research field based on their analysis of state-of-the-art research • have improved their ability to work independently in a pre-defined context	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Advanced Topics in Computer Networks (Seminar)	2 WLH
Examination: Präsentation (ca. 30 min.) und Hausarbeit (max. 15 Seiten) **Examination requirements:** Knowledge in a specific field of advanced computer networks technology; ability to present the earned knowledge in a proper way both orally and in a written report	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unrregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1223: Advanced Topics in Computer Networks**	5 C 3 WLH

Learning outcome, core skills: The students • know the principles of existing and emerging advanced networking technologies • know the details of Peer-to-Peer networks • are capable to describe the principles of cloud computing • have a basic understanding of information centric networking • are able to analyze social networks • have been introduced to state-of-the-art research in the computer networks field	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Advanced Topics in Computer Networks (Lecture,Exercise)	3 WLH
Examination: Oral exam (approx. 30 minutes) or written exam (90 minutes) **Examination requirements:** advanced networking technologies, Peer-to-Peer networks, cloud computing, information centric networking, social networks, state-of-the-art research in the computer networks field	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures; basic programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module M.Inf.1226: Security and Cooperation in Wireless Networks**	6 C 4 WLH

Learning outcome, core skills: On completion of the module students should be able to: • recall cryptographic algorithms and protocols such as encryption, hash functions, message authentication codes, digital signatures and session key establishment • explain security requirements and vulnerabilities of existing wireless networks • discuss upcoming wireless networks and new security challenges that are arising • name trust assumptions and adversary models in the era of ubiquitous computing • show how naming and addressing schemes will be used in the future of the Internet and how these schemes can be protected against attacks • explain how security associations can be established via key establishment, exploiting physical contact, mobility, properties of vicinity and radio link • define secure neighbour discovery and explain the wormhole attack and its detection mechanisms • describe secure routing in multi-hop wireless networks by explaining existing routing protocols, attacks on them and the security mechanisms that can help to achieve secure routing • discuss how privacy protection can be achieved in MANETs in several contexts, such as location privacy and privacy in routing, and recall privacy related notions and metrics • recall selfish and malicious node behaviour on the MAC layer CSMA/CA, in packet forwarding and the impact on wireless operators and the shared spectrum; as countermeasure secure protocols for behaviour enforcement should be known • differentiate between different game theory strategies that can be used in wireless networks	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Security and Cooperation in Wireless Networks (Lecture,Exercise)	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination requirements:** Cryptographic algorithms and protocols, hash functions, message authentication codes, digital signatures, session keys; security requirements, challenges and vulnerabilities in wireless networks; trust assumptions and adversary models in ubiquitous computing; naming and addressing schemes in the future internet; establishment of secure associations (key establishment, exploiting physical contact, mobility, properties of vicinity and radio link); secure neighbourhood discovery and wormhole attack detection mechanisms; secure routing in multi-hop wireless networks; privacy protection in MANETs (location privacy, routing privacy); enforcement of cooperative behaviour in MANETs; game theory strategies used in wireless networks	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in telematics and computer networks
Language:	**Person responsible for module:**

English	Dr. Parisa Memarmoshrefi
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1230: Specialisation Software-defined Networks (SDN)**	5 C 2 WLH

Learning outcome, core skills: The students • are familiar with advanced concepts of software defined networking (SDN) • know how to methodically read, analyse and discuss scientific research papers • have enriched their practical skills in computer networks with regards to SDN and its applications • know about practical deployability issues of SDN • have improved their ability to work independently in a pre-defined context • have improved their ability to work in diverse teams	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Specialization in Software-defined Networking (Exercise,Seminar)	2 WLH
Examination: Term Paper (max. 20 pages) **Examination prerequisites:** Erreichen von mindestes 50% der Übungspunkte **Examination requirements:** Advanced knowledge in software-defined networking; ability to transfer the theoretical knowledge to practical exercises; ability to present the earned knowledge in a proper written report	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures; advanced programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1232: Parallel Computing**	6 C 4 WLH

Learning outcome, core skills: Successfully completing the module, students are able to: • define and describe the benefit of parallel computing • specify the classification of parallel computers (Flyn classification) • analytically evaluate the performance of parallel computing approaches (scaling/ performance models) • know the parallel hardware and performance improvement approaches (cache coherence, pipeline, etc.) • know the interconnects and networks and their role in parallel computing • understand and develop sample parallel programs using different paradigms and development environments (e.g., shared memory and distributed models) • expose to some applications of Parallel Computing through hands-on exercises	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Parallel Computing (Lecture,Exercise) *Contents*: Successfully completing the lecture, students are able to: • define and describe the benefit of parallel computing and identify the role of software and hardware in parallel computing • specify the Flynn classification of parallel computers (SISD, SIMD, MIMD) • analytically evaluate the performance of parallel computing approaches (Scaling/ Performance models) • understand the different architecture of parallel hardware and performance improvement approaches (e.g., caching and cache coherence issues, pipeline, etc.) • define Interconnects and networks for parallel computing • architecture of parallel computing (MPP, Vector, Shared memory, GPU, Many-Core, Clusters, Grid, Cloud) • design and develop parallel software using a systematic approach • parallel computing algorithms and development environments (i.e. shared memory and distributed memory parallel programming) • write parallel algorithms/programs using different paradigms and environments (e.g., POSIX Multi-threaded programming, OpenMP, MPI, OpenCL/CUDA, MapReduce, etc.) • get exposed to some applications of Parallel Computing through exercises References • An Introduction to Parallel Programming, Peter S. Pacheco, Morgan Kaufmann (MK), 2011, ISBN: 978-0-12-374260-5. • Designing and Building Parallel Programs, Ian Foster, Addison-Waesley, 1995, ISBN 0-201-57594-9 (Available online).	4 WLH

• Advanced Computer Architecture: Parallelism, Scalability, Programmability, Kai Hwang, Int. Edition, McGraw Hill, 1993, ISBN: 0-07-113342-9. • In addition to the mentioned text book, tutorial and survey papers will be distributed in some lectures as extra reading material.	
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 20 Min.) **Examination requirements:** Parallel programming; Shared Memory Parallelism; Distributed Memory Parallelism, Single Instruction Multiple Data (SIMD); Multiple Instruction Multiple Data (MIMD); Hypercube; Parallel interconnects and networks; Pipelining; Cache Coherence; Parallel Architectures; Parallel Algorithms; OpenMP; MPI; Multi-Threading (pthreads); Heterogeneous Parallelism (GPGPU, OpenCL/CUDA)	6 C

Admission requirements: • Data structures and algorithms • Programming in C/C++	**Recommended previous knowledge:** • Computer architecture • Basic knowledge of computer networks and topologies
Language: English	**Person responsible for module:** Prof. Dr. Ramin Yahyapour
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1234: Emerging Topics in Advanced Computer Networks**	6 C 4 WLH

Learning outcome, core skills: This course covers the principles of existing and emerging advanced networking technologies and services e.g., ICN, SDN, Smart City, IoT, Advanced Networking. In general, students will study computer networks, future Internet architectures and data science related topics. The students will • know the principles of existing and emerging advanced networking technologies and services • have a basic understanding of computer networks • have been introduced to the state-of-the-art research in the relevant field • build a practical system based on the study material covered in the course	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Emerging Topics in Advanced Computer Networks (Lecture,Exercise)	4 WLH
Examination: Oral exam (approx. 30 min) or written exam (90 min) **Examination requirements:** Advanced networking technologies, Peer-to-Peer networks, Data science, state-of-the-art research in the computer networks field	5 C

Admission requirements: none	**Recommended previous knowledge:** • Basic knowledge in computer networks and data science • Basics knowledge of algorithms and data structures • Basic programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1235: Bio-Inspired Artificial Intelligence**	6 C 4 WLH

Learning outcome, core skills: This course is an introduction to bio-inspired artificial intelligence, explaining its relevant theories and methods that are derived from biological processes. It covers important applications and discusses how to apply biologically inspired algorithms for solving problems. The course will cover concepts and computational models inspired by the area of biology, such as evolutionary systems, cellular systems, neural systems, immune systems, swarm intelligence. On completion of this module, students : • are familiar with the main concepts and methods inspired by biological systems • understand the relevant types of algorithms designed for bio-inspired computing • get knowledge about solving real-world problems with bio-inspired approaches • develop their skills in biologically inspired algorithm design	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Bio-Inspired Artificial Intelligence (Lecture,Exercise) Literature: • Floreano, Dario., and Claudio. Mattiussi. Bio-Inspired Artificial Intelligence Theories, Methods, and Technologies. • Stephan Olariu and Albert Y. Zomaya. Handbook of Bioinspired Algorithms and Applications.	4 WLH
Examination: Written exam (90 min.) or oral exam (approx. 20 min.) **Examination prerequisites:** At least 50% of homework exercises solved. **Examination requirements:** Knowledge of principles of biologically inspired models and computing algorithms, the advantages and limitations of bio-inspired approaches, the value of their application to real world problems, ability to design and implement bio-inspired algorithms.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Parisa Memarmoshrefi
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1236: High-Performance Data Analytics**	6 C 4 WLH

Learning outcome, core skills: Successfully completing the module, students understand • the motivation and use-case for large-scale data analytics • performance implications of hardware and software system for large-scale data workloads • the usage of industry-standard tools to solve data analytics problems • algorithms, data structures, data models, tools, and infrastructure for efficient processing of data	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: High-Performance Data Analytics (Lecture,Exercise) *Contents*: Data-driven science requires the handling of large volumes of data in a quick period of time. Executing efficient workflows is challenging for users but also for systems. This module introduces concepts, principles, tools, system architectures, techniques, and algorithms toward large-scale data analytics using distributed and parallel computing. We will investigate the state-of-the-art of processing data of workloads using solutions in High-Performance Computing and Big Data Analytics. Topics cover: • Challenges in high-performance data analytics • Use-cases for large-scale data analytics • Performance models for parallel systems and workload execution • Data models to organize data and (No)SQL solutions for data management • Industry relevant processing models with tools like Hadoop, Spark, and Paraview • System architectures for processing large data volumes • Relevant algorithms and data structures • Visual Analytics • Parallel and distributed file systems Guest talks from academia and industry will be incorporated in teaching that demonstrates the applicability of this topic. Weekly laboratory practicals and tutorials will guide students to learn the concepts and tools. In the process of learning, students will form a learning community and integrate peer learning into the practicals. Students will have opportunities to present their solutions to the challenging tasks in the class. Students will develop presentation skills and gain confidence in the topics.	4 WLH
Examination: Written exam (90 min) or oral exam (approx. 30 min) **Examination requirements:** • Challenges in high-performance data analytics • Use-cases for large-scale data analytics • Performance models for parallel systems and workload execution • Data models to organize data and (No)SQL solutions for data management • Industry relevant processing models with tools like Hadoop, Spark, and Paraview	6 C

- System architectures for processing large data volumes
- Relevant algorithms and data structures
- Visual Analytics
- Parallel and distributed file systems

Admission requirements: none	**Recommended previous knowledge:** Basic programming skills, Basic knowledge of Linux operating systems, Python
Language: English	**Person responsible for module:** Prof. Dr. Julian Kunkel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 5 - 6; Master: 1 - 4
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Inf.1250: Seminar: Software Quality Assurance**	5 C 2 WLH

Learning outcome, core skills: The students • learn to become acquainted with an advanced topic in software quality assurance by studying up-to-date research papers • gain knowledge about advanced topics in software quality assurance. The advanced topic may be related to areas such as test processes, software metrics, black-box testing,white-box testing, test automation, test generation and testing languages • learn to present and discuss up-to-date research on advanced topics in software quality assurance. • learn to assess up-to-date research on advanced topics in software quality assurance	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Randomness and Software Testing (Seminar) *Contents*: Since exhaustive testing of software is almost never possible, different approaches towards the determination of appropriate test suites have been proposed throughout the years. One direction is to randomize the generation of software tests. This does not necessarily mean that there is no underlying strategy, the opposite is the case. The inputs and/or execution paths of software are created using probability distributions with the aim to optimize certain quality aspects of software. This seminar addresses topics from randomized software testing, including randomized selection of execution paths (e.g., through usage-based testing) and randomized generation of test data (e.g., using fuzzing). In addition to the techniques themselves, we also address how randomized approaches differ from traditional approaches based on coverage criteria and/or heuristics.	2 WLH
Examination: Presentation (approx. 45 minutes) and written report (max. 20 pages) **Examination prerequisites:** (1) Pitch Presentation (approx. 5 minutes); (2) Reviewable Draft of the Seminar Report (minimum 2 pages, maximum 5 pages); (3) Peer Review of a Fellow Student's Work (maximum 1 page) **Examination requirements:** The students shall show that • they are able to become acquainted with an advanced topic in software quality assurance by investigating up-to-date research publications • they are able to present up-to-date research on an advanced topic in software quality assurance • they are able to assess up-to-date research on an advanced topic in software quality assurance • they are able to write a scientific report on an advanced topic in software quality asssurance according to good scientific practice	5 C

Presentation of an advanced topic in software engineering and written report.	

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1251: Seminar: Software Evolution**	5 C 2 WLH

Learning outcome, core skills: The students • learn to become acquainted with an advanced topic in software evolution by studying up-to-date research papers • gain knowledge about advanced topics in software evolution. The advanced topic may be related to areas such as comparison of software projects, defect analysis and prediction, version control and infrastructure, changes and clones, impact analysis, practical applications and experiments, patterns and models, as well as integration and collaboration (process-related and social aspects) • learn to present and discuss up-to-date research on advanced topics in software evolution • learn to assess up-to-date research on advanced topics in software evolution	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Mining Software Repositories (Seminar) *Contents*: The topics in this seminar on software evolution will include the following areas: • comparison of projects • defect analysis and prediction • version control and infrastructure • beyond source code - text analysis • search and recommendation • changes and clones • impact analysis • practical applications and experiments • available resources • visualization and presentation of results • patterns and models • integration and collaboration (process-related and social aspects)	2 WLH
Examination: Presentation (approx.45 minutes) and written report (max. 20 pages) **Examination prerequisites:** (1) Pitch Presentation (approx. 5 minutes); (2) Reviewable Draft of the Seminar Report (minimum 2 pages, maximum 5 pages); (3) Peer Review of a Fellow Student's Work (maximum 1 page) **Examination requirements:** The students shall show that • they are able to become acquainted with an advanced topic in software evolution by investigating up-to-date research publications • they are able to present up-to-date research on an advanced topic in software evolution • they are able to assess up-to-date research on an advanced topic in software evolution	5 C

• they are able to write a scientific report on an advanced topic in software evolution according to good scientific practice Presentation of an advanced topic in software engineering (approx.45 minutes) and written seminar report (max. 20 pages)	

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1252: Specialisation Practical Computer Science**	6 C 4 WLH

Learning outcome, core skills: Students will acquire in-depth knowledge in one of the following areas. • Software Engineering • Operating Systems • Compilers and Programming Languages • Embedded Systems • Mobile Edge Computing • Pervasive Computing	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Specialisation Practical Computer Science (Lecture) *Contents*: Place holder for a course of the professorship of practical computer science.	
Examination: Written examination (90 minutes)	6 C

Course: Seminar Practical Computer Science (Seminar) *Contents*: Place holder for a course of the professorship of practical computer science.	
Examination: Oral report with written elaboration (max. 20 pages)	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Studiendekan Informatik
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module M.Inf.1256: Machine Learning**	6 C 4 WLH

Learning outcome, core skills: Students • learn concepts and techniques of machine learning and pattern recognition, understand their advantages and disadvantages compared to alternative approaches • learn to solve practical data science problems using machine learning and pattern recognition • implement machine learning techniques like PAC learning, support vector machines and kernel methods • learn techniques for optimization and regularization of machine learning and pattern recognition techniques	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Machine Learning (Lecture) Bishop: Pattern Recognition and Machine Learning. https://cs.ugoe.de/prml	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** M.Inf.1256.Ex: At least 50% of homework exercises solved. **Examination requirements:** Knowledge of basic machine learning and pattern recognition techniques, their advantages and disadvantages and approaches to optimization and regularization. Ability to implement these techniques.	6 C

Course: Machine Learning - Exercise (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Knowledge of basic linear algebra and probability
Language: English	**Person responsible for module:** Prof. Dr. Alexander Ecker
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module M.Inf.1257: Deep Learning**	6 C 4 WLH

Learning outcome, core skills: Students • learn concepts and techniques of deep learning and understand their advantages and disadvantages compared to alternative approaches • learn to solve practical data science problems using deep learning • implement deep learning techniques like multi-layer perceptrons, convolutional neural nerworks, recurrent neural networks, deep reinforcement learning • learn techniques for optimization and regularization of deep neural networks	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Deep Learning (Lecture) Goodfellow, Bengio, Courville: Deep Learning. https://www.deeplearningbook.org Bishop: Pattern Recognition and Machine Learning. https://bit.ly/2KDkueT	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** M.Inf.1257.Ex: At least 50% of homework exercises solved. **Examination requirements:** Knowledge of basic deep learning techniques, their advantages and disadvantages and approaches to optimization and regularization. Ability to implement these techniques.	6 C

Course: Deep Learning - Exercise (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Knowledge of basic linear algebra and probability; knowledge of basics of machine learning
Language: English	**Person responsible for module:** Prof. Dr. Alexander Ecker
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module M.Inf.1291: Seminar Advanced Topics in Computer Security and Privacy**	5 C 2 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Investigate selected research topics in computer security and privacy, • Identify existing solutions in the area to be investigated, • Explain, compare, and discuss these solutions, • Develop new ideas to improve the existing solutions, • Summarize their findings in a written report, • Give a presentation about the chosen area.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar on Advanced Topics in Computer Security and Privacy (Seminar)	2 WLH
Examination: Presentation (approx. 30 minutes) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research on an advanced topic in computer security and privacy, • They are able to explain selected solutions related to the chosen topic, • They are able to compare these solutions by analyzing their potential advantages and limitations, • They are able to write a structured scientific report on their findings by respecting the rules of good scientific practice, • They are able to present and to critically discuss their findings in a presentation. The examination includes a **seminar work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	5 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer security and privacy
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:
On completion of the module, students should be able to:

- Investigate selected topics in privacy in ubiquitous computing,
- Identify existing solutions in the area to be investigated,

- Explain, compare, and discuss these solutions,
- Develop new ideas to improve the existing solutions,
- Summarize their findings in a written report,
- Give a presentation about the chosen area.

Georg-August-Universität Göttingen **Module M.Inf.1501: Data Mining in Bioinformatics**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the module, students • know the principles, paradigms, and challenges of data mining methods for multivariate statistical analysis in computational biology and bioinformatics • understand and recognize properties and potential problems of high-dimensional data spaces • know and implement methods for dimensionality reduction using concepts from statistics and linear algebra • can evaluate linear and non-linear dimensionality reduction with the ability to critically assess and interpret the results • apply vector and matrix computation techniques for the analysis of multidimensional data	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Data Mining in Bioinformatics (Lecture,Exercise)	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination prerequisites:** Participation in the exercises and successful completion of three exercise sheets. **Examination requirements:** Students should be able to understand, specify, use, implement and evaluate methods for analysis of high-dimensional biological data and critically assess the limits of their applicability.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of molecular biology, linear algebra and statistics, scientific programming in Python.
Language: English	**Person responsible for module:** Peter Meinicke
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1505: Models and Algorithms in Bioinformatics**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the module, students • know the principles, paradigms, and challenges of models and algorithms for statistical data analysis in bioinformatics • understand and apply principles of scientific programming using concepts from statistics and linear algebra • can implement, train and evaluate probabilistic models for sequence analysis • know and apply algorithms for cluster analysis and visualization of multidimensional data • understand, recognize and solve numerical problems in the implementation of algorithms for model training and inference	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Models and Algorithms in Bioinformatics (Lecture,Exercise)	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination prerequisites:** Participation in the exercises and successful completion of three exercise sheets. **Examination requirements:** Students should be able to understand, specify, use, implement and evaluate models and algorithms for biological data analysis and critically assess the limits of their applicability.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of molecular biology, algorithms and statistics; programming in Python.
Language: English	**Person responsible for module:** Peter Meinicke
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1800: Practical Course Advanced Networking**	6 C 4 WLH

Learning outcome, core skills: The students • know the principles of one existing or emerging advanced networking technology • are able to implement these technologies in useful mobile applications • ideally have advanced in their researching ability • have improved their programming skills • have improved their oral presentation skills • have improved their scientific writing skills • have improved their teamwork	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Course Advanced Networking Lab (Practical course)	4 WLH
Examination: Präsentation (ca. 30 min.) und Hausarbeit (max. 15 Seiten) **Examination requirements:** advanced networking technology, mobile applications, programming, oral presentation, scientific writing, teamwork	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in computer networks; basics of algorithms and data structures; basic programming skills
Language: English	**Person responsible for module:** Prof. Dr. Xiaoming Fu
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Inf.1803: Practical Course in Software Engineering**	6 C 4 WLH

Learning outcome, core skills: The students • learn to become acquainted with up-to-date methods and software tools • learn to select methods and tools for given practical problems in software engineering • learn to apply methods and tools for given practical problems in software engineering • learn to assess methods and tools for given practical problems in software engineering by performing experiments	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Course on Parallel Computing (Practical course) *Contents*: This practical course includes practical exercises on: Distributed memory architectures • Cluster computing with Torque PBS • Grid Computing with Globus Toolkit • Message Passing Interface (MPI) • MapReduce Shared Memory architectures • OpenMP • Pthreads Heterogeneous parallelism (GPU, CUDA, etc.) • CUDA	4 WLH
Examination: Practical exercises in small groups (approx. 4-12 exercises) and oral examinations for the exercises (approx. 15 minutes each), not graded **Examination prerequisites:** Attendance in 90% of the classes **Examination requirements:** The students shall show that • they are able to become acquainted with up-to-date methods and software tools • they are able to select methods and tools for given practical problems in software engineering • they are able to apply methods and tools for given practical problems in software engineering • they are able to assess methods and tools for given practical problems by performing experiments	6 C

Admission requirements:	**Recommended previous knowledge:**
none	Foundations of software engineering.

Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1804: Practical Course in Software Quality Assurance**	6 C 4 WLH

Learning outcome, core skills: The students • learn to become acquainted with up-to-date methods and software tools for software quality assurance • learn to select methods and tools for given practical problems in software quality assurance • learn to apply methods and tools for given practical problems in software quality assurance • learn to assess methods and tools for given practical problems in software quality assurance by performing experiments	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Course on Software Evolution: Origin Analysis (Practical course) *Contents*: Changes in the usage requirements and the technological landscape, among others, drive a continuous necessity for changes in software systems in order to sustain their existence and operability in changing environments. Origin analysis aims to determine the location of points of interest through time. For example, origin analysis aids on the one hand projecting the location of past changes into the current state of the code base, and on the other hand determining previous locations and origins of detected issues. In this course, we will build and extend an existing infrastructure for performing origin analysis and use it to perform studies on large software systems, such as Google Chrome, Mozilla Firefox, Amarok, and others.	4 WLH
Examination: Practical exercises in small groups (approx. 4-6 exercises) and oral examinations for the exercises (approx. 15 minutes each), not graded **Examination prerequisites:** Attendance in 90% of the classes **Examination requirements:** The students shall show that • they are able to become acquainted with with up-to-date methods and software tools for software quality assurance • they are able to select methods and tools for given practical problems in software quality assurance • they are able to to apply methods and tools for given practical problems in software quality assurance • they are able to to assess methods and tools for given practical problems in software quality assurance by performing experiments	6 C

Admission requirements: none	**Recommended previous knowledge:** Foundations of software engineering.
Language: English	**Person responsible for module:** Prof. Dr. Jens Grabowski

Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.Inf.1808: Practical Course on Parallel Computing**	6 C 4 WLH

Learning outcome, core skills: Successfully completing the module, students are able to: • practically work with a cluster of computers (e.g., using a batch system) • practically utilize grid computing infrastructures and manage their jobs (e.g., Globus toolkit) • apply distributed memory architectures for parallelism through practical problem solving (MPI programming) • utilize shared memory architectures for parallelism (e.g., OpenMP and pthreads) • utilize heterogenous parallelism (e.g., OpenCL, CUDA and general GPU programming concepts) • utilize their previous knowledge in data structures and algorithms to solve problems using their devised (or enhanced) parallel algorithms	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Course on Parallel Computing (Practical course) *Contents*: As a practical course, the focus will be on the hands-on session and problem solving. Students will get a brief introduction to the topic and then will use the laboratory equipment to solve assignments of each section of the course.	4 WLH
Examination: Oral examination (approx. 20 minutes), not graded **Examination requirements:** • understand how to manage computing jobs using a cluster of computers or using grid computing facilities • understand the configuration of a PBS cluster through practical assignments • practically use LRM clusters and POVRay examples • understand cluster computing related topics (error handling, performance management, security) in more depth and using hands-on experience and practically using Globus toolkit • design and implement solutions for parallel programs using distributed memory architectures (using MPI) • design and implement solutions for parallel programs using shared memory parallelism (using OpenMP, pthreads) • practically work with MapReduce programming framework and problem solving using MapReduce • practically work with heterogenous parallelism environment (GPGPU, OpenCL, CUDA, etc.)	6 C

Admission requirements: • Data structures and algorithms • Programming in C(/C++)	**Recommended previous knowledge:** • Parallel Computing • Computer architecture • Basic knowledge of computer networks • Basic know-how of computing clusters

Language: English	**Person responsible for module:** Prof. Dr. Ramin Yahyapour
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Inf.1822: Practical Course in Data Fusion**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the module, students are able to • become acquainted with software tools and frameworks for data fusion • work with modern sensors • collect, process and analyze (sensor) data • implement data fusion algorithms • experimentally evaluate and compare data fusion algorithms • apply data fusion algorithms in the context of localization, navigation, tracking, sensor networks and robotics	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Practical Course in Data Fusion (Practical course)	4 WLH
Examination: Practical project in small groups, oral presentation of results (approx. 15 minutes each), scientific report (max. 6 pages each), not graded **Examination prerequisites:** All practical exercises must be passed with at least 40% of the achievable points. If there is a total of five or fewer exercises, this condition must be fulfilled for all but one exercise; in all other cases, this condition must be fulfilled for all but two exercises. **Examination requirements:** Implementation and evaluation of data fusion algorithms, oral presentation, scientific writing and teamwork.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Inf.1185 or M.Inf.1188
Language: English	**Person responsible for module:** Prof. Dr. Marcus Baum
Course frequency: non-periodic	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Inf.1824: Practical Course on Computer Security and Privacy**	6 C 4 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Identify and understand existing solutions in the area to be investigated, • Design and implement a new approach to improve the investigated existing solutions, • Present their chosen approach in a written report justifying their design decisions and implementation choices as well as clearly document their implementation, • Give a presentation about their implemented approach.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lab Computer Security and Privacy (Practical course)	4 WLH
Examination: Presentation (approx. 30 minutes) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research and analyse the design space of a chosen topic, • They are able to make design decisions based on this analysis, • They are able to design and implement an approach improving the current state-of-the-art, • They are able to write a structured scientific report on their design decisions and the resulting solution by respecting the rules of good scientific practice, • They are able to present and to critically discuss their implemented solution in a presentation. The examination includes a **project work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	6 C

Admission requirements: none	**Recommended previous knowledge:** Backgrounds in Computer Security and Privacy
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Inf.1828: Lab Usable Security and Privacy**	6 C 4 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Identify, understand, and analyze usability issues in the field of security and privacy, • Design, plan, and conduct a user study to explore a selected issue by following the data protection regulations and taking into account ethical aspects, • Document, analyze, and critically discuss the obtained results, • Propose future improvements or directions based on the obtained results, • Present the study design, methodology, results, and consequences in a written report, • Give a presentation about their study and the associated findings.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lab Usable Security and Privacy (Practical course)	4 WLH
Examination: Presentation (approx. 20 min.) und written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research and analyse the issues related to the usability of security and privacy solutions, • They are able plan and conduct a user study from its design to the processing and presentation of the results, • They are able to write a structured scientific report on their study including its design and the obtained results by respecting the rules of good scientific practice and data protection regulations, • They are able to present both their study and the associated results as well as critically discuss them in a presentation. The examination includes a **project work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of privacy and usability obtained, e.g., in the recommended lecture “Usable Security and Privacy”
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

20	

Georg-August-Universität Göttingen **Module M.Inf.1832: Lab Privacy and Security in Robotics and AI Systems**	6 C 4 WLH

Learning outcome, core skills: On completion of the module, students should be able to: • Identify and understand existing privacy-preserving or security solutions in the area of robotics and/or artificial intelligence. • Design and implement a new approach to improve the investigated existing solutions, • Present their chosen approach in a written report justifying their design decisions and implementation choices as well as clearly document their implementation, • Give a presentation about their implemented approach.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Lab Privacy and Security in Robotics and AI Systems (Practical course)	4 WLH
Examination: Presentation (approx. 30 min.) and written report (max. 8 pages) **Examination requirements:** The students shall show that: • They are able to conduct literature research and analyze the design space of their chosen topic, • They are able to make design decisions based on this analysis, • They are able to design and implement an approach improving the current state-of-the-art, • They are able to write a structured scientific report including their design decisions and the resulting solution by respecting the rules of good scientific practice, • They are able to present and critically discuss their implemented solution in a presentation, while respecting the given timeframe. The examination includes a **project work** over the semester, **presentation** (approx. 30 min.), and **written report** (max. 8 pages in IEEE double-column template). The exam can be taken **individually or as group work** .	6 C

Admission requirements: none	**Recommended previous knowledge:** Backgrounds in security and privacy obtained in one or several of our offered lectures.
Language: English	**Person responsible for module:** Prof. Dr. Delphine Reinhardt
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Inf.1904: From written manuscripts to big humanities data**	6 C 4 WLH

Learning outcome, core skills: This course is designed for both students of Computer Science and of the Humanities. By working in groups of up to four people and solving problems as a team, students are involved in the entire process of transforming assets of our cultural heritage into digital data (Digital Transformation). The students will work in particular with the transcriptions of manuscripts, by analysing digitally available texts with text mining and information retrieval techniques. Students will also gain knowledge and experience with the problems that arise because of information overload and information poverty. If on the one hand digitisation leads to an 'information overload' of digitally available data, on the other, the 'information poverty' embodied by the loss of books and the fragmentary state of texts form an incomplete and biased view of our past. Students will understand that in a digital ecosystem this coexistence of data overload and poverty adds considerable complexity to scholarly research. Students will, therefore, learn how to deal with uncertain data.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: The letters and tales of the brothers Grimm (Seminar) *Contents*: This course specialises on handwritten texts by the brothers Grimm. *Course frequency:* irregular	2 WLH
Course: Cultural Heritage Programming (Practical course) *Contents*: The object of this course is for students to develop and implement a team project related to historical data. Students will gain knowledge and experience in versioning and building systems, as well as managing a project and working with historical data, which is often fragmentary or hard to attribute to a specific author or line of transmission. The project that students will work on will depend on their programming skills. Students will be able to pick an area of interest, spanning from linguistic acquisition to visualisations of historical data, to the natural language processing of texts, OCR processing and handwriting recognition or infrastructural development. *Course frequency:* irregular	2 WLH
Examination: Seminar work of about 20 pages **Examination prerequisites:** Regular and active participation in the courses; students commit to a project and actively contribute. **Examination requirements:** With the examination students will prove their knowledge of the content, background and context history of the chosen text, as well as showing their capability of transcribing, processing and visualizing historical data. Students will also demonstrate whether they are able to work as part of a team on common problem solving activities. The knowledge and skills of the student will be tested with written essays, wiki, blog entries, a position statement, or an written equivalent.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Marco Büchler
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Inf.1905: Advanced Topics in Language and Text Processing**	3 C 2 WLH

Learning outcome, core skills: A successful completion of the module enables the participants to: • describe the problem area that the course focusses on • name, illustrate and analyse the algorithms covered • evaluate and compare different analysis methods • select suitable algorithms for specific application scenarios	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced Topics in Language and Text Processing (Seminar) *Contents*: This course covers advanced topics in computational linguistics and natural language processing, for example processing creative language, processing non-standard language varieties, language processing for low-resource languages, argumentation mining, ethics and algorithmic bias, obtaining and incorporating world knowledge, multi-modal language processing, opinion mining, text generation etc. The students will learn about different sub-tasks for the given topic and become acquainted with state-of-the-art algorithms for tackling them. They will learn to understand how these algorithms work and will be able to critically assess them (i.e., what are the underlying assumptions an algorithm makes, in which circumstances they perform well or not so well, and how do they compare to other approaches). Students will also be enabled to understand and critically evaluate research papers in the field.	2 WLH
Examination: Presentation (max. 20 minutes) and term paper (max. 10 pages) **Examination prerequisites:** Participation in the exercise **Examination requirements:** The students can describe the problem area covered in the course, are able to illustrate and reflect on the current research literature and evaluate advantages and disadvantages for specific application scenarios of the methods covered in the course. **In case of groupwork** , the exam is taken as **collective examination** : Presentation (max. 20 minutes per examinee) and term paper (max. 10 pages per examinee).	3 C

Admission requirements:	**Recommended previous knowledge:** Knowledge of basic language analysis tasks (tokenisation, part-of-speech tagging, syntactic parsing) and basic computational methods for performing them. Basic knowledge of probability theory (how to compute probabilities, conditional and joint probability, statistical in-/dependence, Bayes' theorem). Basic knowledge of linguistics (parts-of-speech, syntactic structure, word senses). The recommended knowledge can be obtained by taking an introductory course in computational linguistics/

	natural language processing or working through a relevant reference book.
Language: English, German	**Person responsible for module:** Prof. Dr. Caroline Sporleder
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.Inf.1906: Computational Semantics and Discourse Processing**	6 C 4 WLH

Learning outcome, core skills: A successful completion of the module enables the participants to: • describe the problem area • name, describe and analyse the algorithms covered in the course • evaluate and compare different methods • select suitable algorithms for specific application scenarios	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Computational Semantics and Discourse Processing (Exercise,Seminar) *Contents*: This course covers selected topics in computational semantics and discourse processing, for example lexical semantics and word sense disambiguation, distributional semantics, compositionality and sentence semantics, semantic representations, semantic parsing, co-reference resolution, generating referring expressions, named entity recognition and disambiguation, modelling discourse coherence, temporal analysis, sentiment and emotion analysis, detecting discourse relations and discourse parsing, text generation etc. Students will learn basic semantic and pragmatic constructs and the challenges they pose to language processing. They will become aquainted with different approaches for analysing semantic and discourse phenomena and will be able to critically assess these.	4 WLH
Examination: Presentation (max. 30 minutes) and term paper (max. 12 pages) **Examination prerequisites:** Participation in the exercise **Examination requirements:** The students demonstrate knowledge of challenges and processing methods in the area of computational semantics and discourse processing and are able to explain and evaluate methods and theories in this area. They are able to: • describe the problem area • name, explain and analyse the algorithms covered in the course • evaluate and compare different methods • select suitable algorithms for specific application scenarios	6 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of basic language analysis tasks (tokenisation, part-of-speech tagging, syntactic parsing) and basic computational methods for performing them. The recommended knowledge can be obtained by taking an introductory course in computational linguistics/natural language processing or working through a relevant reference book.

Language: English, German	**Person responsible for module:** Prof. Dr. Caroline Sporleder
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.IntTheol.02: Christianity in an Intercultural Perspective**	7 C 4 WLH

Learning outcome, core skills: In this module, students acquire in-depth knowledge of: • important contextual theologies in overview, • transnationalisation, globalisation and development theories, • denominational studies and the history of the ecumenical movement, and the ability to: • appreciate contextual theologies critically and develop a personal stand, • use and develop concrete examples to present the possibilities and limitations of applying different theoretical approaches, and • analyse ecumenical discussions in a sensitive manner.	**Workload:** Attendance time: 56 h Self-study time: 154 h

Course: The Ecumenical Movement (Lecture)	2 WLH
Course: Contextual Theologies (Seminar)	2 WLH
Examination: Essay (max. 10 pages) **Examination prerequisites:** Regular attendance at 2. **Examination requirements:** • In-depth knowledge of structures and central positions of theological education. • Contextualisation of the Christian message in common social processes and its description in social scientific terms. • Sound knowledge and analytical skill in the areas of denominational studies and Ecumenics. • Application of elementarising and mediating methods.	7 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. Friedrich Heinrich Prof. Dr. Wilhelm Richebächer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.IntTheol.03: Cross-Culture I**	9 C 6 WLH

Learning outcome, core skills: In this module, students acquire in-depth knowledge of: • the theoretical and methodological bases of cultural studies and of its relevance for theological reflection sensitive to intercultural and interreligious matters, • strategies of planning a research project in intercultural theology thematically and methodlogically, • ethical problems typically arising out of intercultural encounters in research, which may be relevant to the students' own research projects. Students also acquire the ability to: • develop their own project ideas and research questions, • reflect on the processes of intercultural exchange and to employ communicative strategies in intercultural encounters, • include questions from the field cultural studies in the conception, conduction and evaluation of projects in intercultural theology, • develop strategies for solving conflicts and crises that may arise in the course of their research project, • present the draft of their research project, to revise it according to critical feedback, and to create a time-table for the project.	**Workload:** Attendance time: 84 h Self-study time: 186 h

Course: Intercultural Hermeneutics (Lecture)	2 WLH

Course: Intercultural Research and Competence (Seminar)	2 WLH
Course: Carrying Out an Intercultural Research Project (Colloquium)	2 WLH

Examination: Oral Presentation, not graded	

Examination: Oral (approx. 20 mins); or written (90 mins) **Examination prerequisites:** Regular attendance at courses 2 and 3; draft of research project (max. 10 pages) with an oral presentation of the intended project (approx. 15 minutes) **Examination requirements:** Identification of and reflection on processes of transcultural exchange, modes of communication and problem areas.	9 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. Friedrich Heinrich Prof. Dr. Ulrike Schröder
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	1
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.IntTheol.08a: Religions, Churches and Theology in Asia and the Middle East**	8 C 4 WLH

Learning outcome, core skills:	**Workload:**
In this module, students acquire basic knowledge of: • structures of the history of religions and Christianity in Asia and the Near East, • selected religious communities in Asia (Islam, Hinduism, Buddhism etc.), and • significant stages in the history of research in theology and religious studies in and about Asia and the Near East. Students also acquire the ability to: • analyse texts and situations from church history and religious history, • discuss and apply concepts and methods of theology in Asia vis-à-vis concrete examples, and • reflect on the history of Asian religions and Christianity with international guest lecturers and in various perspectives.	Attendance time: 56 h Self-study time: 184 h

Course: History of Religions and Church History in Asia and the Middle East (Lecture)	2 WLH
Course: Religion, Politics and Society in Asia and the Middle East (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Regular attendance at 2. **Examination requirements:** • Sound knowledge of the structures of religious and church history, also regarding the contexts of Islam, Hinduism etc. in Asia. • Ability to analyse systematically the relationship between religions and society in Asia. • Sound knowledge of significant stages in the history of research in theology and religious studies about and in Asia and the Near East, esp. regarding colonial and mission history. • In-depth knowledge and essential skills in central theological methods and concepts of Christian theology in Asia and the Near East and in the analysis of sources and situations pertaining to religious and church history.	8 C

Admission requirements: M.IntTheol.01, M.IntTheol.02	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Dr. h. c. mult. Martin Tamcke
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.IntTheol.14-01: Theories of Religion**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
In this module, students acquire introductory and basic knowledge of: • the history and problems of the concept of religion, • well-established and current conceptualisations of religion, • the academic terminology and categorisations (e.g. "religion", "faith", "piety") in the disciplines related to the study of religion, and • the general methods and methodology of approaching the phenomenon "religion". They will be basically capable of: • a complex presentation and differentiated assessment of the topic area, • an identification of implicit and explicit theoretical conceptions and argumentation in the field of "religion" and • a reasoned classification into a theoretical structure, • an analytical, responsible and critical approach to the phenomena and forms of religious reality, • an interpretation of religious symbols and imagery from different methodical perspectives, • a differentiation and critical assessment of academic perspectives of religion, • a general overview of the specifics of different academic approaches – religious philosophy, phenomenology, sociology, psychology, etc., and in general of • in-depth and systematic information and communication skills with regard to religious phenomena.	Attendance time: 28 h Self-study time: 152 h

Course: Theories of Religion (Seminar)	2 WLH
Examination: Oral (approx. 20 mins); or written (90 mins) **Examination prerequisites:** Regular attendance at the seminar. **Examination requirements:** • Differentiated elucidation and discussion of the term "religion". • Analysis and interpretation of specific examples of the application of the concept of religion. • Definition, analysis and critical evaluation of relevant religious theories and methodical approaches to religious phenomena.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. Friedrich Heinrich
Course frequency: not specified	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.IntTheol.14-05: Ethical Expertise in the Horizon of Religion**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students acquire introductory and basic knowledge, for example, of: • historically and currently relevant ethical theories, • important ethical issues and conceptions, • specific ethical reasoning and terminology, • aspects of values education, • normative manifestations of religious understanding of the world (e.g. "revelation" as justification, "tradition" as argument), and • the importance and manifestation of ethical theory in the context of (world) religions. They will be basically capable of: • a complex presentation and differentiated assessment of the topic area, • a critical interpretation and evaluation of the ethical dimension of current social action and their positioning in an overall theoretical structure, • a technically-correct preparation of an ethical report on a selected topic, • a discursive presentation and argumentation of a developed ethical position, and in general of • ethical discernment in the context of academic methodology and further systematic and complex information and communication skills with regard to the topic area.	Attendance time: 28 h Self-study time: 152 h

Course: Ethical Expertise in the Horizon of Religion (Seminar)	2 WLH
Examination: Oral (approx. 20 mins); or written (90 mins) **Examination prerequisites:** Regular attendance at block seminar **Examination requirements:** Application of the methods involved in the "ethical report" on an exemplary ethical issue in the context of interreligious /intercultural encounter; critical explanation and discussion of the report.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. Friedrich Heinrich
Course frequency: not specified	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.002: Methods and theories between Text- and Cultural Studies**	4 C 2 WLH

Learning outcome, core skills: • Discussing methods and theories in relation to oral and written texts and visual material regarding their applicability in the Iranian context • Applying scientific data collection methods such as interviews, field research etc. • Proper data handling • Applying analytical methods such as content analysis, qualitative text analysis • Diachronic discourse analysis by means of specific examples, with particular regard to oral and written expression • Expanding knowledge of theories and methods through independent reading	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Independent Studies Further reading on the topic of seminar 1 or 2 including analytical study of sample texts and translations from Persian comprising a total of 160 hours. The independent studies will be supervised by the lecturer of the seminar chosen.	

Course: Seminar on one of the following topics e.g. "Texts on the role of women in Iranian society", "Cultural discourses in literary texts", "Representation of gender in Iranian films"	2 WLH
Examination: Term paper (max. 18 pages) in seminar 1 or 2 **Examination prerequisites:** Regular participation in seminar 1 and 2; oral presentation (approx. 20 minutes) in seminar 1 and 2 and portfolio on each topic of seminar 1 and 2 (max. 5 pages each) **Examination requirements:** Ability to discuss theories and methods by means of sample analysis of oral or written texts or visual material.	4 C

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser Prof. Dr. Eva Orthmann
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.003: Colloquium**	4 C 2 WLH

Learning outcome, core skills: Students learn how to prepare a Master thesis. They acquire an overview of current research fields and learn to reflect and discuss academic projects. Students present and discuss the topic of their Master thesis. Here, both the advice of the instructor and the feedback from the other participants enable them to plan their academic project adequately in term of form, method and content.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Colloquium without own presentation	1 WLH
Examination: Portfolio (max. 5 pages), not graded **Examination prerequisites:** regular participation, preparation of two minutes (in total max. 6 pages) **Examination requirements:** Contribution to the discussion of papers presented during the course.	1 C

Course: Colloquium with own presentation	1 WLH
Examination: Oral Presentation (approx. 30 minutes), not graded **Examination prerequisites:** regular participation **Examination requirements:** Preparation, presentation and discussion of a concept for the final thesis **.**	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
The module will be offered starting in the summer semester of 2023.

Georg-August-Universität Göttingen **Module M.Ira.011: Aspects of Iranian religious traditions**	4 C 2 WLH

Learning outcome, core skills: • Knowledge of the respective religious traditions (such as Zoroastrianism, Sufism, Yezidism, Ahl-e Haqq) of Iranian peoples and ethnic groups in pre-Islamic and Islamic times • Knowledge of the cultural and historical context of these traditions, in particular their origins und forms of transmission, and their importance for understanding contemporary phenomena • Identifying connections between past and present religious traditions and conceptions with particular regard to self-perception and cultural identity • Familiarity with current research methods in the field of Iranian religions • Knowledge of theories and methods of transmission	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar on one of the following topics e.g. "The idea of God and man in Iranian Sufism", "Shiite Islam", "Special characteristics of the Kurds' religious traditions"	2 WLH
Examination: Oral presentation (approx. 30 minutes) in seminar 1 or 2 **Examination prerequisites:** Regular participation in seminar 1 and 2; preparation of one portfolio on each topic of seminar 1 and 2 (max. 5 pages each) **Examination requirements:** • Kenntnis von der jeweiligen religiösen Tradition, ihren Quellen, ihrer Entstehungsgeschichte und den Tradierungsformen • Auseinandersetzung mit verschiedenen theoretischen Ansätzen und Forschungsmethoden im Bereich der iranischen Religionen	4 C

Examination requirements: • Knowledge of the respective religious tradition, its sources, the history of its development and the forms of its transmission • Discussion of different theoretical approaches and research methods in the field of Iranian religions	

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
The term paper and oral presentation may not be completed in the same course.

Georg-August-Universität Göttingen **Module M.Ira.011a: Aspects of Iranian religious traditions - enhanced**	8 C 2 WLH

Learning outcome, core skills: • Knowledge of the respective religious traditions (such as Zoroastrianism, Sufism, Yezidism, Ahl-e Haqq) of Iranian peoples and ethnic groups in pre-Islamic and Islamic times • Knowledge of the cultural and historical context of these traditions, in particular their origins und forms of transmission, and their importance for understanding contemporary phenomena • Identifying connections between past and present religious traditions and conceptions with particular regard to self-perception and cultural identity • Familiarity with current research methods in the field of Iranian religions • Knowledge of theories and methods of transmission	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar on one of the following topics e.g. "The idea of God and man in Iranian Sufism", "Shiite Islam", "Special characteristics of the Kurds' religious traditions"	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination prerequisites:** Regelmäßige Teilnahme, Portolio (max. 10 Seiten) **Examination requirements:** • Kenntnis von der jeweiligen religiösen Tradition, ihren Quellen, ihrer Entstehungsgeschichte und den Tradierungsformen • Kenntnis der relevanten Forschungsliteratur	4 C

Course: Independent Studies *Contents*: Zusätzliche Lektüre zum Thema des Seminars.	
Examination: Term paper (max. 12 pages) **Examination requirements:** • Knowledge of the respective religious tradition, its sources, the history of its development and the forms of its transmission • Discussion of different theoretical approaches and research methods in the field of Iranian religions	4 C

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.012: History and images of history in the Iranian cultural area**	4 C 2 WLH

Learning outcome, core skills: In the Iranian cultural area there are numerous sources from the Islamic and pre-Islamic periods that perceive and present history in very different ways. This differs markedly from the European understanding of history. The course enables students: • to examine an epoch or a specific phenomenon of Iranian history • to become acquainted with various theories and methods of Iranian historiography in pre-Islamic, Islamic, modern Iranian and Indo-Persian sources • to give an analytical description of images of history from different historical or religious contexts and sources • to make a comparative analysis of different methods and images of history	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar on one of the following topics e.g. "Pre-Islamic history as interpreted by Ferdousi", "The Sassanid construction of history", "Images of history in the Iranian cultural area", "Notions of sovereignty"	2 WLH
Examination: Oral presentation (approx. 30 minutes) in seminar 1 or 2 **Examination prerequisites:** Regular participation in seminar 1 and 2; preparation of one portfolio on each topic of seminar 1 and 2 (max. 5 pages each) **Examination requirements:** • Kenntnis einer spezifischen Epoche bzw. eines spezifischen historischen Phänomens • Auseinandersetzung mit der dazugehörigen Forschungsliteratur und Methodik • Fähigkeit zum Umgang mit historischen Quellen und deren Analyse	4 C

Examination requirements: Students should be able to analyze and critically interpret different representations of history, taking the specific nature of the literature considered into account. They should examine relevant scientific methods and be able to apply them to the texts.	

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
The term paper and oral presentation may not be completed in the same course.

Georg-August-Universität Göttingen **Module M.Ira.012a: History and images of history in the Iranian cultural area - enhanced**	8 C 2 WLH

Learning outcome, core skills: In the Iranian cultural area there are numerous souces from the Islamic and pre-Islamic periods that perceive and present history in very different ways. This differs markedly from the European understanding of history. The course enables students: • to examine an epoch or a specific phenomenon of Iranian history • to become acquainted with various theories and methods of Iranian historiography in pre-Islamic, Islamic, and modern Iranian sources • to give an analytical description of images of history from different historical or religious contexts and sources • to make a comparative analysis of different methods and images of history	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar on one of the following topics e.g. "Pre-Islamic history as interpreted by Ferdousi", "The Sassanid construction of history", "Images of history in the Iranian cultural area", "Notions of sovereignty"	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination prerequisites:** Regelmäßige Teilnahme, Portfolio (max. 10 Seiten) **Examination requirements:** • Kenntnis von der jeweiligen historischen Fragestellung, ihren Quellen, ihrer Entstehungsgeschichte und den Tradierungsformen • Kenntnis der relevanten Forschungsliteratur	4 C

Course: Independent Studies *Contents*: Zusätzliche Lektüre zum Thema des Seminars.	
Examination: Term paper (max. 12 pages) **Examination requirements:** Students should be able to analyze and critically interpret different representations of history, taking the specific nature of the literature considered into account. They should examine relevant scientific methods and be able to apply them to the texts.	4 C

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.013: Persian Literature**	4 C 2 WLH

Learning outcome, core skills: • Reading moderately difficult to difficult contemporary and/or classical literary texts, newspaper articles or Internet texts • Enhanced grammar skills and expanded vocabulary • Application and discussion of methods of textual analysis • Knowledge of rhetorical and stylistic elements of the texts • Examining specific questions of the genre and theories of texts	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Modern Persian literature (poetry, prose) (Seminar)	2 WLH
Examination: Referat (ca. 30 Min.) und Portfolio (max. 10 Seiten) **Examination prerequisites:** Regular participation in course 1 and 2; oral presentation (approx. 10 minutes) on seminar 1 and 2 **Examination requirements:** • Fortgeschrittenes Textverständnis • Kenntnis der relevanten Forschungsliteratur • Anwendung und Diskussion textanalytischer Methoden	4 C

Examination requirements: Advanced Persian language and translation skills. Application and discussion of methods of textual analysis.	

Admission requirements: Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: jedes 2. Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.013a: Reading and analysis of Persian literature - enhanced**	8 C 2 WLH

Learning outcome, core skills: • Reading moderately difficult to difficult contemporary and/or classical literary texts, newspaper articles or Internet texts • Enhanced grammar skills and expanded vocabulary • Application and discussion of methods of textual analysis • Knowledge of rhetorical and stylistic elements of the texts • Examining specific questions of the genre and theories of texts	**Workload:** Attendance time: 56 h Self-study time: 184 h

Course: Modern Persian literature (poetry, prose) (Seminar)	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination prerequisites:** Regular participation in course 1 and 2; oral presentation (approx. 10 minutes) on seminar 1 and 2 **Examination requirements:** • Kenntnis von der jeweiligen Literaturgattung, ihren Quellen und Tradierungsformen • Kenntnis der relevanten Forschungsliteratur	4 C

Course: Independent Studies *Contents*: Zusätzliche Lektüre zum Thema des Seminars	
Examination: Term Paper (max. 18 pages) **Examination requirements:** • Fortgeschrittenes Textverständnis • Kenntnis der relevanten Forschungsliteratur • Anwendung und Diskussion textanalytischer Methoden • Fortgeschrittene Sprachkenntnisse und Übersetzungskenntnisse des Persischen • Fähigkeit zur Analyse der relevanten Quellenliteratur	4 C

Examination requirements: Advanced Persian language and translation skills. Application and discussion of methods of textual analysis.	

Admission requirements: Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: jedes 2. Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

20	

Georg-August-Universität Göttingen **Module M.Ira.014: Iranian Language and Culture**	4 C 2 WLH

Learning outcome, core skills: • Gaining knowledge of the older or more recent cultural or religious traditions of Iranian peoples or ethnic groups • the background context of the traditions, their current frame of reference and their role and significance in the present • Knowledge of specific strategies and methods of transmission and general theories of tradition • Knowledge of relevant aspects of public communication and specific media genres and forms of expression • Knowledge of current research methods for analyzing media content and independent reading • Familiarization with a particular topic, ability to do independent research and analysis in connection with current issues	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar on one of the following topics (Seminar) e.g. "Gender representation in Iranian media", "Iranian press", "Analysis of Iranian films"	2 WLH
Examination: Term paper (max. 18 pages) in seminar 1 or 2 **Examination prerequisites:** Regular participation in seminar 1 and 2; oral presentation (approx. 20 minutes) in seminar 1 and 2 and portfolio on each topic of seminar 1 and 2 (max. 5 pages each) **Examination requirements:** • Overview of various forms of tradition in Iranian cultures, their past and present conceptions, knowledge of relevant theoretical approaches • Confidence in dealing with the respective media in an Iranian language, knowledge of media history as well as relevant theories and research approaches, independent application of analytical methods	4 C

Admission requirements: B.Ira.108 or equivalent Persian language skills	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.014a: Iranian Language and Culture - enhanced**	8 C 2 WLH

Learning outcome, core skills: • Gaining knowledge of the older or more recent cultural or religious traditions of Iranian peoples or ethnic groups • the background context of the traditions, their current frame of reference and their role and significance in the present • Knowledge of specific strategies and methods of transmission and general theories of tradition • Knowledge of relevant aspects of public communication and specific media genres and forms of expression • Knowledge of current research methods for analyzing media content and independent reading • Familiarization with a particular topic, ability to do independent research and analysis in connection with current issues	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Seminar on one of the following topics e.g. "Gender representation in Iranian media", "Iranian press", "Analysis of Iranian films"	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination prerequisites:** Regular participation; oral presentation (approx. 20 minutes) and portfolio (max. 5 pages) on the seminar topic **Examination requirements:** • Overview of various forms of tradition in Iranian cultures, their past and present conceptions, knowledge of relevant theoretical approaches • Confidence in dealing with the respective media in an Iranian language, knowledge of media history as well as relevant theories and research approaches, independent application of analytical methods	4 C

Course: Independent Studies *Contents*: Zusätzliche Lektüre zum Thema des Seminars	
Examination: Term Paper (max. 18 pages) **Examination requirements:** • Überblick über verschiedene Überlieferungsformen in iranischen Kulturen und Sprachen, ihren vergangenen und heutigen Vorstellungen, Kenntnis relevanter theoretischer Ansätze • Sicherheit im Umgang mit der jeweiligen kulturellen oder sprachlichen Tradition und den dazugehörigen Quellen • Kenntnis der relevanten Theorien und Forschungsansätze, selbständige Anwendung analytischer Methoden	4 C

Admission requirements:	**Recommended previous knowledge:**
B.Ira.108 or equivalent Persian language skills	none

Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.015: Documents and Media**	4 C 2 WLH

Learning outcome, core skills: On successfully completing the module the students are able to deal with manuscript materials in Persian. They acquire fundamental knowledge of different styles of writing like Nastaliq und Shekaste and learn how to decipher and transcribe handwritten documents. They are introduced to handling documents and to the typical terminology of certain categories of documents. They learn how to examine characteristic elements such as colophon, seal, tughra etc. and include them in their analysis.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Exercise (Webinar) *Contents*: „Archivmaterialien aus Hydarabad“, „Handschriftenkunde“, "iranische Presse", "Analyse iranischer Filme"	2 WLH
Examination: Referat (ca. 30 Minuten) und Portfolio (max. 10 Seiten) **Examination prerequisites:** Regular participation; written homework assignments comprising max. 25 pages of transcription **Examination requirements:** Knowledge of different styles of writing, ability to transcribe and translate manuscript materials and to analyze typical elements of manuscripts and records.	4 C

Admission requirements: Persian language skills at the level of B.Ira.108	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: once a yearirregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.015a: Documents and Media - enhanced**	8 C 2 WLH

Learning outcome, core skills: On successfully completing the module the students are able to deal with manuscript materials in Persian. They acquire fundamental knowledge of different styles of writing like Nastaliq und Shekaste and learn how to decipher and transcribe handwritten documents. They are introduced to handling documents and to the typical terminology of certain categories of documents. They learn how to examine characteristic elements such as colophon, seal, tughra etc. and include them in their analysis.	**Workload:** Attendance time: 28 h Self-study time: 212 h

Course: Exercise (Webinar) *Contents*: "Archivmaterialien aus Hydarabad", "Handschriftenkunde", "iranische Presse", "Analyse iranischer Filme"	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination prerequisites:** Regular participation; written homework assignments comprising max. 50 pages of transcription **Examination requirements:** Knowledge of different styles of writing, ability to transcribe and translate manuscript materials and to analyze typical elements of manuscripts and records. Confidence in dealing with relevant research approaches, independent application of analytical methods.	4 C

Course: Exercise (Webinar) *Contents*: Zusätzliche Lektüre zum Thema des Seminars	
Examination: Term Paper (max. 18 pages) **Examination requirements:** • Überblick über verschiedene Quellengattungen, Sicherheit im Umgang mit der jeweiligen Quellengattung in persischer Sprache • Sicherheit in der Entzifferung von handschriftlichen Materialien • Kenntnis relevanter theoretischer Ansätze • Sicherheit im Umgang mit den jeweiligen Medien in einer iranischen Sprache, Kenntnis der Mediengeschichte sowie relevanter Theorien und Forschungsansätze, selbständige Anwendung analytischer Methoden	4 C

Admission requirements: Persian language skills at the level of B.Ira.108	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: once a yearirregular	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ira.017: Iranian Archaeology and Art**	4 C 2 WLH

Learning outcome, core skills: • General knowledge of the history of art in the Iranian cultural area in pre-Islamic and Islamic times • Specific knowledge of the archaeology and art of at least one historical period • Knowledge of aspects of the history of science in Iranian archaeology and art, particularly with regard to the development of theoretical foundations and application of methods • Application or discussion of theories and methods in archaeology and art	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Independent Studies *Contents*: Zusätzliche Lektüre zum Thema des Seminars	

Course: Seminar on one of the following topics (Seminar) e.g.: "Art of the Sassanids", "Introduction to Iranian archaeology", "Islamic art and architecture"	2 WLH
Examination: Oral presentation (approx. 20 minutes) with written elaboration (max. 15 pages) or term paper (max. 15 pages) **Examination prerequisites:** Regular participation **Examination requirements:** • Kenntnis der jeweiligen historischen Epoche und ihren spezifischen Artefakten • Kenntnis der Wissenschaftsgeschichte auf diesem Gebiet • Fähigkeit zur Anwendung oder Diskussion der spezifischen Theorien und Methoden an Beispielen	4 C

Examination requirements: Knowledge of the respective historical period and its particular artefacts. Knowledge of the history of science in this field. Ability to apply or discuss specific theories and methods by means of examples.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Orthmann
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Ling.111: Foundations**	12 C 6 WLH

Learning outcome, core skills: Students have acquired the basic terminology, theoretical approaches and analytical methods in the chosen core areas of linguistics (phonetics/phonology, morphology, syntax, semantics, pragmatics). On successful completion of the module they can: • independently analyse linguistic observations in specific approaches to language structure; • independently employ basic theoretical notions and terminology to specific examples; • describe linguistic phenomena in a professionally adequate manner.	**Workload:** Attendance time: 84 h Self-study time: 276 h

Course: Colloquium Linguistics (Colloquium) *Course frequency:* each semester	2 WLH

Course: Syntax or Morphology (Seminar)	2 WLH

Course: Semantics or Phonology (Seminar) *Course frequency:* once a year	2 WLH

Examination: written exam (90 minutes) or portfolio (max. 20 pages) or term paper (max. 15 pages) **Examination prerequisites:** small task in course 1, 2 and 3 (in text form, max. 8 pages or oral examination, approx. 30 minutes). **Examination requirements:** The examination can be taken in one of the seminars (course 2 oder course 3)	12 C

Examination requirements: The students demonstrate that they are familiar with the basic theories of the core areas of linguistics and that they have a basic command of the description procedures common to the individual disciplines. They are able to comprehend statements in the relevant literature and to analyze given linguistic data appropriately.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Markus Steinbach Prof. Dr. Hedzer Hugo Zeijlstra
Course frequency: each winter semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2

Georg-August-Universität Göttingen **Module M.Ling.121: Methods**	12 C 6 WLH

Learning outcome, core skills: Students have acquired the notional and technical/methodological basics in different empirical (e.g. statistics, programming) and/or analytical (logic, theoretical informatics) areas. On successful completion of the module they can: • employ the axioms of scientific thinking in order to capture linguistic statements/ approaches; • plan and conduct empirical studies (corpus, experimental) in accordance with current standards in empirical research; • collect data in the field or in the lab using appropriate methodology for the different levels of linguistic analysis; • analyze and visualize empirical data and test hypotheses statistically.	**Workload:** Attendance time: 84 h Self-study time: 276 h

Course: Colloquium Linguistics (Colloquium) *Course frequency:* each semester	2 WLH

Course: Empirical and Analytical Methods 1 (Seminar) *Course frequency:* each winter semester	2 WLH

Course: Empirical and Analytical Methods 2 (Seminar) *Course frequency:* each summer semester	2 WLH

Examination: Practical examination (max. 20 pages) or portfolio (max. 20 pages) or term paper (max. 15 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approximately 30 min.) in course 1,2 and 3 **Examination requirements:** The examination can be taken in one of the seminars (course 2 or 3)	12 C

Examination requirements: Students demonstrate that they can independently apply the current standards of empirical research and the formal research foundations. They demonstrate that they can design and draft empirical studies, evaluate linguistic data, test hypotheses and capture linguistic problems through formal procedures.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stavros Skopeteas Dr. Thomas Weskott
Course frequency: The seminars take place alternately in winter and summer term.	**Duration:** 2 semester[s]

Number of repeat examinations permitted:	Recommended semester:
twice	2 - 3

Georg-August-Universität Göttingen **Module M.Ling.122: Methods**	9 C 4 WLH

Learning outcome, core skills: Students have acquired the notional and technical/methodological basics in different empirical (e.g. statistics, programming) and/or analytical (logic, theoretical informatics) areas. On successful completion of the module they can: • employ the axioms of scientific thinking in order to capture linguistic statements/ approaches; • plan and conduct empirical studies (corpus, experimental) in accordance with current standards in empirical research; • collect data in the field or in the lab using appropriate methodology for the different levels of linguistic analysis; • analyse and visualise empirical data and test hypotheses statistically.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Colloquium Linguistics (Colloquium)	2 WLH

Course: Empirical and Analytical Methods 1 or Empirical and Analytical Methods 2 (Seminar) *Course frequency:* The seminars take place alternately in winter and summer term.	2 WLH
Examination: Practical examination (max. 20 pages) or portfolio (max. 20 pages) or term paper (max. 15 pages) **Examination prerequisites:** small task (in text form, max. 8 pages or oral examination, approx. 30 minutes) in course 1 and 2	9 C

Examination requirements: Students demonstrate that they can independently apply the current standards of empirical research and the formal research foundations. They demonstrate that they can design and draft empirical studies, evaluate linguistic data, test hypotheses and capture linguistic problems through formal procedures.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stavros Skopeteas Dr. Thomas Weskott
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.131: Theory**	12 C 6 WLH

Learning outcome, core skills: Students are competent in applying theoretical approaches to grammar independently. On successful completion of the module they can: • independently identify the data relevant for capturing a linguistic phenomenon; • independently analyze linguistic data within theoretical approaches; • formulate the scientific contribution of an analysis to the current state of research; • test predictions of competing approaches and draw conclusions concerning their adequacy.	**Workload:** Attendance time: 84 h Self-study time: 276 h

Course: Colloquium Linguistics *Course frequency:* each semester	2 WLH

Course: Grammatical Theory 1 (Seminar) *Course frequency:* each winter semester	2 WLH

Course: Grammatical Theory 2 (Seminar) *Course frequency:* each summer semester	2 WLH

Examination: term paper (max. 15 pages) or portfolio (max. 20 pages) or written examination (90 Min) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approximately 30 min.) in course 1,2 and 3 **Examination requirements:** The examination can be taken in one of the seminars (course 2 or 3)	12 C

Examination requirements: Students demonstrate that they can identify linguistically relevant data and present them in a systematic way. They demonstrate that they can independently develop linguistic analyses of selected phenomena and can assess and conclusively present the adequacy of alternative approaches.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Uwe Junghanns Prof. Dr. Clemens Steiner-Mayr
Course frequency: The seminars take place alternately in winter and summer term.	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Georg-August-Universität Göttingen **Module M.Ling.132: Theory**	9 C 4 WLH

Learning outcome, core skills: Students are competent in applying theoretical approaches to grammar independently. On successful completion of the module they can: • independently identify the data relevant for capturing a linguistic phenomenon; • independently analyse linguistic data within theoretical approaches; • formulate the scientific contribution of an analysis to the current state of research; • test predictions of competing approaches and draw conclusions concerning their adequacy.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Colloquium Linguistics (Colloquium)	2 WLH

Course: Grammatical Theory 1 or Grammatical Theory 2 (Seminar)	2 WLH
Examination: Term paper (max. 15 pages) or portfolio (max. 20 pages) or written examination (90 Min) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approximately 30 min.) in course 1 and 2	9 C

Examination requirements: Students demonstrate that they can identify linguistically relevant data and present them in a systematic way. They demonstrate that they can independently develop linguistic analyses of selected phenomena and can assess and conclusively present the adequacy of alternative approaches.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Uwe Junghanns Prof. Dr. Clemens Steiner-Mayr
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.141: Language Competence**	6 C 2 WLH

Learning outcome, core skills: Students acquire passive and active language skills, which provide a basis for the crosslinguistic and theory-driven approach to questions of language structure or history to be developed in the further course of their studies. In order to foster insights into crosslinguistic variation, courses in any foreign language(s) except for English are acceptable in order to successfully complete this module. English is excluded because competence in it is already a requirement for this course of studies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language Competence (Seminar) *Contents*: Language course for linguists (seminar)	2 WLH
Examination: Written examination (90 min.) or oral examination (ca. 30 min.) or language competence examination (oral part: approx. 15 Min.; written part: 90 Min.) **Examination requirements:** Students demonstrate that they are familiar with the basic grammar and the essential typological features of the foreign language they have chosen. In the case of living languages, they are able to communicate in simple everyday situations and can understand simple to moderately difficult texts with the help of a dictionary. With corpus languages, the skill of foreign-language communication is not applicable.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Uwe Junghanns Prof. Dr. Guido Mensching
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Georg-August-Universität Göttingen **Module M.Ling.211: Text Analysis and Discourse Processing: Foundations**	9 C 2 WLH

Learning outcome, core skills: Students acquire basic competence in the areas of textual linguistics and discourse theory. On successful completion of the module they can: • describe basic linguistic properties of texts and discourses on all levels of grammar and pragmatics; • critically discuss important research literature in textual linguistics and discourse theory; • critically reflect on similarities and differences between literary and non-literary texts; • apply and evaluate cognitive models of textual understanding or methods of automatic text evaluation.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Text Analysis and Discourse Processing: Foundations (Seminar)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written and/or oral forms of scientific communication - that they are familiar with text and discourse phenomena (e.g. anaphora, tense/aspect, information structure) and that they can adequately describe relevant data. They have a sound knowledge of the formal analysis of discourse phenomena and can apply theories to new data.	

They can critically review studies in text linguistics and discourse theory and they can present them in a consistent way. In the written elaboration, they demonstrate their competence to present appropriately the results of their investigations.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Anke Holler Prof. Dr. Stavros Skopeteas
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.212: Text Analysis and Discourse Processing: Foundations**	6 C 2 WLH

Learning outcome, core skills: Students acquire basic competence in the areas of textual linguistics and discourse theory. On successful completion of the module they can: • describe basic linguistic properties of texts and discourses on all levels of grammar and pragmatics; • critically discuss important research literature in textual linguistics and discourse theory; • critically reflect on similarities and differences between literary and non-literary texts; • apply and evaluate cognitive models of textual understanding or methods of automatic text evaluation.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Text Analysis and Discourse Processing: Foundations (Seminar)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written and/or oral forms of scientific communication - that they are familiar with text and discourse phenomena (e.g. anaphora, tense/aspect, information structure) and that they can adequately describe relevant data. They have a sound knowledge of the formal analysis of discourse phenomena and can apply theories to new data. They can critically review studies in text linguistics and discourse theory and they can present them in a consistent way. In the written elaboration, they demonstrate their competence to present appropriately the results of their investigations.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Anke Holler Prof. Dr. Stavros Skopeteas
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.221: Text Analysis and Discourse Processing: Research**	9 C 2 WLH

Learning outcome, core skills: Students acquire basic competence in the areas of textual linguistics and discourse theory. On successful completion of the module they can: • describe basic linguistic properties of texts and discourses on all levels of grammar and pragmatics; • critically discuss important research literature in textual linguistics and discourse theory; • critically reflect on similarities and differences between literary and non-literary texts; • apply and evaluate cognitive models of textual understanding or methods of automatic text evaluation.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Text Analysis and Discourse Processing: Research (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written and/or oral forms of scientific communication - that they are familiar with text and discourse phenomena (e.g. anaphora, tense/aspect, information structure) and that they can adequately describe relevant data. They have a sound knowledge of the formal analysis of discourse phenomena and can apply theories to new data. They can critically review studies in text linguistics and discourse theory and they can present them in a consistent way. In the written elaboration, they demonstrate their competence to present appropriately the results of their investigations.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.211
Language: English, German	**Person responsible for module:** Prof. Dr. Anke Holler Prof. Dr. Stavros Skopeteas
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.222: Text Analysis and Discourse Processing: Research**	6 C 2 WLH

Learning outcome, core skills: Students acquire basic competence in the areas of textual linguistics and discourse theory. On successful completion of the module they can: • describe basic linguistic properties of texts and discourses on all levels of grammar and pragmatics; • critically discuss important research literature in textual linguistics and discourse theory; • critically reflect on similarities and differences between literary and non-literary texts; • apply and evaluate cognitive models of textual understanding or methods of automatic text evaluation.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Text Analysis and Discourse Processing: Research (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written and/or oral forms of scientific communication - that they are familiar with text and discourse phenomena (e.g. anaphora, tense/aspect, information structure) and that they can adequately describe relevant data. They have a sound knowledge of the formal analysis of discourse phenomena and can apply theories to new data. They can critically review studies in text linguistics and discourse theory and they can present them in a consistent way. In the written elaboration, they demonstrate their competence to present appropriately the results of their investigations.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.212
Language: English, German	**Person responsible for module:** Prof. Dr. Anke Holler Prof. Dr. Stavros Skopeteas
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.311: Language Typology and Fieldwork: Foundations**	9 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of theories of language variation and of methods of data collection and analysis concerning languages of different language families. On successful completion of the module they can: • independently plan a comparative linguistic study, execute it and analyze the results; • collect data in order to describe less researched areas of the grammar of a language; • apply approaches in phonology/morphology/syntax/semantics for the analysis of linguistic phenomena in different languages or in a comparative perspective; • apply frameworks concerning the similarities and differences between languages, that capture the roots of cross-linguistic variation as well as the implications of similarities between the languages of the world for linguistic competence.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Language Typology and Fieldwork: Foundations (Seminar) *Contents*: Language Typology I (seminar) or fieldwork seminar (which can take place within a field excursion)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written and/or oral forms of scientific communication - that they can employ frameworks of language comparison and language typology. They also demonstrate their ability to collect data independently and/or to describe grammatical phenomena based on observational data (corpora), to analyze the data within the	

framework of current theories of linguistic structure and to present their findings in written and oral form according to the current standards of scientific communication in linguistics.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** apl. Prof. Dr. Götz Keydana Prof. Dr. Guido Mensching
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.312: Language Typology and Fieldwork: Foundations**	6 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of theories of language variation and of methods of data collection and analysis concerning languages of different language families. On successful completion of the module they can: • independently plan a comparative linguistic study, execute it and analyze the results; • collect data in order to describe less researched areas of the grammar of a language; • apply approaches in phonology/morphology/syntax/semantics for the analysis of linguistic phenomena in different languages or in a comparative perspective; • apply frameworks concerning the similarities and differences between languages, that capture the roots of cross-linguistic variation as well as the implications of similarities between the languages of the world for linguistic competence.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language Typology and Fieldwork: Foundations (Seminar) *Contents*: Language Typology I (seminar) or fieldwork seminar (which can take place within a field excursion)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written and/or oral forms of scientific communication - that they can employ frameworks of language comparison and language typology. They also demonstrate their ability to collect data independently and/or to describe grammatical phenomena based on observational data (corpora), to analyze the data within the framework of current theories of linguistic structure and to present their findings in written and oral form according to the current standards of scientific communication in linguistics.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** apl. Prof. Dr. Götz Keydana Prof. Dr. Guido Mensching
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.321: Language Typology and Fieldwork: Research**	9 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of theories of language variation and of methods of data collection and analysis concerning languages of different language families. On successful completion of the module they can: • independently plan a comparative linguistic study, execute it and analyze the results; • collect data in order to describe less researched areas of the grammar of a language; • apply approaches in phonology/morphology/syntax/semantics for the analysis of linguistic phenomena in different languages or in a comparative perspective; • apply frameworks concerning the similarities and differences between languages, that capture the roots of cross-linguistic variation as well as the implications of similarities between the languages of the world for linguistic competence.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Language Typology and Fieldwork: Research (Seminar) *Contents*: Language Typology II (seminar) or fieldwork seminar (which can take place within a field excursion)	2 WLH
Examination: Term Paper (max. 15 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written and/or oral forms of scientific communication - that they can employ frameworks of language comparison and language typology. They also demonstrate their ability to collect data independently and/or to describe grammatical phenomena based on observational data (corpora), to analyze the data within the framework of current theories of linguistic structure and to present their findings in	

written and oral form according to the current standards of scientific communication in linguistics.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.311
Language: English, German	**Person responsible for module:** apl. Prof. Dr. Götz Keydana Prof. Dr. Guido Mensching
Course frequency: each semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.322: Language Typology and Fieldwork: Research**	6 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of theories of language variation and of methods of data collection and analysis concerning languages of different language families. On successful completion of the module they can: • independently plan a comparative linguistic study, execute it and analyze the results; • collect data in order to describe less researched areas of the grammar of a language; • apply approaches in phonology/morphology/syntax/semantics for the analysis of linguistic phenomena in different languages or in a comparative perspective; • apply frameworks concerning the similarities and differences between languages, that capture the roots of cross-linguistic variation as well as the implications of similarities between the languages of the world for linguistic competence.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language Typology and Fieldwork: Research (Seminar) *Contents*: Language Typology II (seminar) or fieldwork seminar (which can take place within a field excursion)	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written and/or oral forms of scientific communication - that they can employ frameworks of language comparison and language typology. They also demonstrate their ability to collect data independently and/or to describe grammatical phenomena based on observational data (corpora), to analyze the data within the framework of current theories of linguistic structure and to present their findings in written and oral form according to the current standards of scientific communication in linguistics.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.312
Language: English, German	**Person responsible for module:** apl. Prof. Dr. Götz Keydana Prof. Dr. Guido Mensching
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.411: Language Change: Foundations**	9 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of current research on language change. On successful completion of the module they can: • independently apply methods of current historical linguistics in order to describe dynamic processes; • apply current methods and approaches in research into language change (e.g. grammaticalization theory, quantitative historical linguistics, dialectometry); • recognize and analyze the relationship between synchronic and diachronic variation.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Language Change: Foundations (Seminar)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: Students demonstrate - in written and/or oral forms of scientific communication - that they can collect historical data using methods of contemporary historical linguistics and that they can apply contemporary approaches to the interpretation of phenomena of language change.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Marco Coniglio Apl. Prof. Dr. Götz Keydana

Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.412: Language Change: Foundations**	6 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of current research on language change. On successful completion of the module they can: • independently apply methods of current historical linguistics in order to describe dynamic processes; • apply current methods and approaches in research into language change (e.g. grammaticalization theory, quantitative historical linguistics, dialectometry); • recognize and analyze the relationship between synchronic and diachronic variation.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language Change: Foundations (Seminar)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** Students demonstrate - in written and/or oral forms of scientific communication - that they can collect historical data using methods of contemporary historical linguistics and that they can apply contemporary approaches to the interpretation of phenomena of language change.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Marco Coniglio Apl. Prof. Dr. Götz Keydana
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.421: Language Change: Research**	9 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of current research on language change. On successful completion of the module they can: • independently apply methods of current historical linguistics in order to describe dynamic processes; • apply current methods and approaches in research into language change (e.g. grammaticalization theory, quantitative historical linguistics, dialectometry); • recognize and analyze the relationship between synchronic and diachronic variation.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Language Change: Research (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: Students demonstrate - in written and/or oral forms of scientific communication - that they can collect historical data using methods of contemporary historical linguistics and that they can apply contemporary approaches to the interpretation of phenomena of language change.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.411
Language: English, German	**Person responsible for module:** Prof. Dr. Marco Coniglio Apl. Prof. Dr. Götz Keydana
Course frequency:	**Duration:**

each semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.422: Language Change: Research**	6 C 2 WLH

Learning outcome, core skills: Students have acquired a deeper understanding of current research on language change. On successful completion of the module they can: • independently apply methods of current historical linguistics in order to describe dynamic processes; • apply current methods and approaches in research into language change (e.g. grammaticalization theory, quantitative historical linguistics, dialectometry); • recognize and analyze the relationship between synchronic and diachronic variation.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Language Change: Research (Seminar)	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** Students demonstrate - in written and/or oral forms of scientific communication - that they can collect historical data using methods of contemporary historical linguistics and that they can apply contemporary approaches to the interpretation of phenomena of language change.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.412
Language: English, German	**Person responsible for module:** Prof. Dr. Marco Coniglio Apl. Prof. Dr. Götz Keydana
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.Ling.511: Sign Languages and Visual Communication: Foundations**	9 C 2 WLH

Learning outcome, core skills: Students have acquired an advanced understanding of the structure of sign languages and gestures accompanying language, as well as of the impact of modality of language production and perception on the structure of languages and their communicative use. Moreover, students have acquired skills in methods of video-based data collection and analysis for research into visual-gestural forms of communication. On successful completion of the module they can: • independently plan, conduct, and evaluate empirical studies in the area of sign language linguistics; • identify and describe modality-specific grammatical and pragmatic phenomena; • apply approaches of grammar and pragmatics to the analysis of phenomena in sign language in an appropriate manner; • critically discuss approaches to the evolution and typology of sign languages; • critically discuss theories of the interaction of language and gesture in the context of visual communication.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Sign Languages and Visual Communication: Foundations (Seminar) *Contents*: Visual communication I (seminar) or lab course (at the Sign Language Lab at the University of Göttingen)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written, oral or sign language forms of scientific communication - that they can apply approaches of sign language linguistics and	

gesture research. They also demonstrate their ability to collect data independently and/ or to describe linguistic and gestural phenomena through observational data (corpora), to analyze the data in the framework of current theories of language structure as well as to present their findings in written, oral or signed form according to the current standards of scientific communication in linguistics.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Markus Steinbach Dr. Nina-Kristin Pendzich
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.512: Sign Languages and Visual Communication: Foundations**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students have acquired an advanced understanding of the structure of sign languages and gestures accompanying language, as well as of the impact of modality of language production and perception on the structure of languages and their communicative use. Moreover, students have acquired skills in methods of video-based data collection and analysis for research into visual-gestural forms of communication. On successful completion of the module they can: • independently plan, conduct, and evaluate empirical studies in the area of sign language linguistics; • identify and describe modality-specific grammatical and pragmatic phenomena; • apply approaches of grammar and pragmatics to the analysis of phenomena in sign language in an appropriate manner; • critically discuss approaches to the evolution and typology of sign languages; • critically discuss theories of the interaction of language and gesture in the context of visual communication.	Attendance time: 28 h Self-study time: 152 h

Course: Sign Languages and Visual Communication: Foundations (Seminar) *Contents*: Visual communication I (seminar) or lab course (at the Sign Language Lab at the University of Göttingen)	2 WLH
Examination: Portfolio (max. 20 pages) or poster presentation (approx. 15 Min.) or talk (ca. 20 Min.) with written elaboration (max. 10 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written, oral or sign language forms of scientific communication - that they can apply approaches of sign language linguistics and gesture research. They also demonstrate their ability to collect data independently and/ or to describe linguistic and gestural phenomena through observational data (corpora), to analyze the data in the framework of current theories of language structure as well as to present their findings in written, oral or signed form according to the current standards of scientific communication in linguistics.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.111
Language: English, German	**Person responsible for module:** Prof. Dr. Markus Steinbach Dr. Nina-Kristin Pendzich
Course frequency: each semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted:	Recommended semester:
twice	2

Georg-August-Universität Göttingen **Module M.Ling.521: Sign Languages and Visual Communication: Research**	9 C 2 WLH

Learning outcome, core skills: Students have acquired an advanced understanding of the structure of sign languages and gestures accompanying language, as well as of the impact of modality of language production and perception on the structure of languages and their communicative use. Moreover, students have acquired skills in methods of video-based data collection and analysis for research into visual-gestural forms of communication. On successful completion of the module they can: • independently plan, conduct, and evaluate empirical studies in the area of sign language linguistics; • identify and describe modality-specific grammatical and pragmatic phenomena; • apply approaches of grammar and pragmatics to the analysis of phenomena in sign language in an appropriate manner; • critically discuss approaches to the evolution and typology of sign languages; • critically discuss theories of the interaction of language and gesture in the context of visual communication.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Sign Languages and Visual Communication: Research (Seminar) *Contents*: Visual Communication II (seminar)	2 WLH
Examination: Term Paper (max. 15 pages)	6 C

Course: Independent Studies or practical training *Contents*: **Independent Studies:** Within the framework of Independent Studies, students work out the state of the art in a relevant research paradigm and, to this end, prepare a structured overview that serves as the basis for conducting an empirical study. The total duration of Independent Studies is approximately 90 hours of self-study. The Independent Studies are carried out in consultation with the lecturer of the course taken for the module and are supervised in the course during the semester and if appropriate in consultation hours. **Practical training** : An internship (90 hours) can be completed in a work context inside or outside the university that offers an activity relevant to MA-Linguistics, e.g. a research project within the university, work experience in an institution or company in which the subject-related competences can be applied.	
Examination: Small task (written, max. 8 pages), not graded	3 C

Examination requirements: The students demonstrate - in written, oral or sign language forms of scientific communication - that they can apply approaches of sign language linguistics and gesture research. They also demonstrate their ability to collect data independently and/ or to describe linguistic and gestural phenomena through observational data (corpora),	

to analyze the data in the framework of current theories of language structure as well as to present their findings in written, oral or signed form according to the current standards of scientific communication in linguistics.	

Admission requirements: none	**Recommended previous knowledge:** M.Ling.511
Language: English, German	**Person responsible for module:** Prof. Dr. Markus Steinbach Dr. Nina-Kristin Pendzich
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Ling.522: Sign Languages and Visual Communication: Research**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students have acquired an advanced understanding of the structure of sign languages and gestures accompanying language, as well as of the impact of modality of language production and perception on the structure of languages and their communicative use. Moreover, students have acquired skills in methods of video-based data collection and analysis for research into visual-gestural forms of communication. On successful completion of the module they can: • independently plan, conduct, and evaluate empirical studies in the area of sign language linguistics; • identify and describe modality-specific grammatical and pragmatic phenomena; • apply approaches of grammar and pragmatics to the analysis of phenomena in sign language in an appropriate manner; • critically discuss approaches to the evolution and typology of sign languages; • critically discuss theories of the interaction of language and gesture in the context of visual communication.	Attendance time: 28 h Self-study time: 152 h

Course: Sign Languages and Visual Communication: Research (Seminar) *Contents*: Visual Communication II (seminar)	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Small task (written, max. 8 pages or oral, approx. 30 min.) **Examination requirements:** The students demonstrate - in written, oral or sign language forms of scientific communication - that they can apply approaches of sign language linguistics and gesture research. They also demonstrate their ability to collect data independently and/ or to describe linguistic and gestural phenomena through observational data (corpora), to analyze the data in the framework of current theories of language structure as well as to present their findings in written, oral or signed form according to the current standards of scientific communication in linguistics.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Ling.512
Language: English, German	**Person responsible for module:** Prof. Dr. Markus Steinbach Dr. Nina-Kristin Pendzich
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.MIS.007: Topics in Modern Indian Studies III: Ideologies, Worldviews and Religions**	9 C 4 WLH

Learning outcome, core skills: The students have in-depth knowledge of specific aspects and questions of modern Indian studies related to ideologies and worldviews from an interdisciplinary perspective and are able to apply these critically to the academic literature as well as to examine them on the basis of primary sources in the methodological framework of different disciplines. They are able to discuss subject-specific topics and can defend their arguments independently.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Seminar	2 WLH
Examination: Presentation (15 min.) with essay (15 p. max.)	9 C

Course: Übung	2 WLH

Examination requirements: The students know the relevant academic literature of select topics of Modern Indian Studies related to ideologies and worldviews, are able to apply these to different aspects and problems in different disciplines. They are able to develop their own theses and can present and defend them. The have in-depth knowledge of methods of modern Indian Studies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: not specified	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.011: Diversity and Inequality: Theories and Methods**	6 C 3 WLH

Learning outcome, core skills: Students gain in-depth knowledge of the crucial dimensions of diversity in India and their impact on inequality with regard to caste, religion, gender, class, ethnicity, language, and more. Students are familiarised with the causes, emergence and consequences of diversity and inequality in India. They present theoretical and empirical studies on diversity and inequality spanning disciplines and methodological approaches, relate them to current state of research and learn how to conceptualise a research project on diversity and inequality.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Portfolio (max. 15 pages)	6 C

Examination requirements: Students are able to understand and analyse primary sources and secondary literature on diversity and inequality. They are expected to apply theoretical arguments and relate them to the current state of research, be able to work with literature and methods from different disciplines, and write critical reviews and summaries of the course readings.	

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.012: Diversity and Inequality: Theories and Methods: Case Studies**	6 C 3 WLH

Learning outcome, core skills: Students gain in-depth knowledge of the crucial dimensions of diversity in India and their impact on inequality with regard to caste, religion, gender, class, ethnicity, language, and more. Students are familiarised with the causes, emergence and consequences of diversity and inequality in India, and analyse empirical case studies from the perspectives of different disciplines and methodological approaches.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Term Paper (max. 15 pages)	6 C

Examination requirements: Students are able to understand and analyse primary sources and secondary literature on diversity and inequality. They are expected to analyse empirical case studies, work with literature and methods from different disciplines, and write critical reviews and summaries of the course readings.	

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.015: Metamorphoses of the Political II**	6 C 3 WLH

Learning outcome, core skills: Studierende • haben vertiefte Kenntnis von politischen Veränderungen im kolonialen und postkolonialen Indien und von interdisziplinären wissenschaftlichen Debatten zur indischen Politik; • kennen komparative und theoretische Debatten zur Politik und können theoretische und empirische Studien zur indischen Politik aus dem Blickwinkel verschiedener Disziplinen und methodischer Ansätze darstellen; • konzipieren und führen ein Forschungsprojekt zur indischen Politik durch.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar *Course frequency:* each summer semester	2 WLH
Course: Übung *Course frequency:* each summer semester	1 WLH
Examination: Portfolio (max. 15 pages)	6 C

Examination requirements: • Vertiefte Kenntnis der von Primär- und Sekundärliteratur zur indischen Politik und die Fähigkeit, diese kritisch zu analysieren; • Anwendung theoretischer Erörterungen bei der Analyse von empirischem Material; • Fähigkeit Literatur und Methoden verschiedener Disziplinen darzustellen und zu verwenden; • Fähigkeit eigene und kritische wissenschaftliche Rezensionen/ Zusammenfassungen zur weiterführenden Kursliteratur abzufassen; • Fähigkeit Forschungsarbeit über indische Politik durchzuführen und zu präsentieren.	

Admission requirements: Keine	**Recommended previous knowledge:** Keine
Language: English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: every 3rd semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.016: Analysing Religions in South Asia**	6 C 3 WLH

Learning outcome, core skills: Students will analyse the impact of different concepts of religion on the research field, compare methods from different disciplines used to conduct research on religions in South Asia, critically examine the relations between politics and religion, compare empirical materials from other regions of the world, and learn approaches to the study of transregional movements.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Portfolio (15 p. max.) or essay (15 p. max.)	6 C

Examination requirements: Students should be able to assess the impact of different concepts of religion on the research field, describe the relations between politics and religion in India and elsewhere in South Asia; compare religious practices and institutions in India with those in other regions of the world, identify methods for the analysis of transregional religious movements, and understand the role of the different disciplines of the social sciences and the humanities in studying religion.	

Admission requirements: Keine	**Recommended previous knowledge:** Keine
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.017: Media and the Public Sphere in Modern India**	6 C 4 WLH

Learning outcome, core skills: In this module students learn about the modern media and the public sphere related to India. The students have an understanding of the particularities of media and the public sphere in modern societies; are familiar with theoretical approaches relevant to the research on media and the public sphere and are able to apply these approaches to various regional and societal contexts; have knowledge about crucial current issues related to media in modern India and how these are dealt with in different scientific disciplines; have an understanding of the social relevance of media and the public sphere in modern India.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (15 p. max.) or essay (15. p. max.)	6 C

Examination requirements: The students are able to explain perspectives related to the media used to analyse society, culture and politics in modern India; know how to reflect on theoretical approaches relevant to an understanding of media and the public sphere and how to apply such theoretical approaches to various regional and societal contexts; analyse the social relevance of media and the public sphere in modern India.	

Admission requirements: Keine	**Recommended previous knowledge:** Keine
Language: English	**Person responsible for module:** Prof. Dr. Patrick Peter Eisenlohr
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.018: Capitalism and Social Transformation in Modern India**	6 C 3 WLH

Learning outcome, core skills: Dieses Modul vermittelt Kenntnisse über die Integration der modernen indischen Gesellschaft in die kapitalistische Weltwirtschaft, die damit einhergehenden Kommodifizierungsprozesse, sozialstrukturellen Transformationen und gesellschaftlichen Konfliktkonstellationen. Die Studierenden • erlangen ein Verständnis für Grundprozesse kapitalistischer Transformation und ihre Konsequenzen für moderne Gesellschaften; • werden mit unterschiedlichen theoretischen Ansätzen vertraut, die für das Studium dieser Problematik relevant sind, und lernen die Grenzen dieser Theorien bei der Untersuchung spezifischer regionaler Kontexte kennen; • gewinnen Einsichten in laufende Debatten in verschiedenen wissenschaftlichen Disziplinen über den Zusammenhang von Kapitalismus und sozialer Transformation im modernen Indien; • sind in der Lage, konkrete gesellschaftliche Phänomene auf dem Hintergrund der theoretischen Debatten und der relevanten Forschungsliteratur zum modernen Indien zu analysieren.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 10 Seiten)	6 C

Examination requirements: • theoretische Ansätze, die für das Verständnis von Grundprozessen kapitalistischer Transformation und ihre Konsequenzen für moderne Gesellschaften relevant sind, kritisch und, wo erforderlich, selektiv auf den Kontext des modernen Indiens anzuwenden; • die Besonderheiten kapitalistischer Transformation im Kontext indischer Gesellschaft herauszuarbeiten; • die Relevanz dieser Transformationsprozesse anhand einer konkreten Fallstudie zu überprüfen.	

Admission requirements: Keine	**Recommended previous knowledge:** Keine
Language: English	**Person responsible for module:** Prof. Dr. Ravi Ahuja
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.023: Methodological Approaches toTopics in Modern Indian Studies III**	9 C 4 WLH

Learning outcome, core skills: Students get familiarised with methods of Modern Indian Studies by working on selected topics; get a practical training in selected methods; learn how to reflect critically these methods; and acquire a methodologically reflective approach to selected topics.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Vorlesung oder Seminar oder Übung	2 WLH
Course: Seminar oder Übung oder Tutorium	2 WLH
Examination: Portfolio (max. 20 pages)	9 C

Examination requirements: Students are able to reflect critically and apply selected methods, work on selected topics in a methodologically reflective manner, and develop and present their own research questions.	

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: German, English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.024: Research Methods in Modern Indian Studies I: Ethnography**	9 C 4 WLH

Learning outcome, core skills: The students are familiarized with the aspects of anthropological theory necessary to formulate and undertake an ethnographic research project, learn practical skills important to design and undertake ethnographic research, and acquire a self-reflecting perspective on their ethnographic research process.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Vorlesung oder Seminar oder Übung	2 WLH
Course: Seminar oder Übung oder Tutorium	2 WLH
Examination: Portfolio (max. 20 pages)	9 C

Examination requirements: Knowledge in theoretical, methodological and epistemological aspects of ethnographic fieldwork from an anthropological perspective and practical skills important to design, undertake and reflect ethnographic fieldwork acquired by completing a series of collaborative or individual exercises.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** PD Dr. Michael Dickhardt
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.030: Development Economics of India Seminar**	6 C 2 WLH

Learning outcome, core skills: Students are able to analyse selected issues in development economics related to India based on research literature, case studies, and more, and know how to contextualize these issues by applying theoretical and methodological approaches. Students are familiar with crucial research debates (and can analyse them critically and relate them to Indian contexts) and demonstrate high levels of methodological reflection when presenting their knowledge (both orally and in writing).	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar	2 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 10 Seiten)	6 C

Examination requirements: Students have to be able to: analyse selected issues in development economics related to India and to contextualise them; apply theoretical and methodological approaches; critically analyse crucial research debates and relate them to Indian contexts; and independently develop and communicate ideas demonstrating high levels of methodological reflection.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.032: Studies in the Anthropology of Power I: Group-wise Hierarchies**	6 C 4 WLH

Learning outcome, core skills: Students acquire a systematic overview of the institutional bases and typical cultural features of inherited group-wise hierarchies. We focus in particular on caste in the Indian context, but comparative examples consider ethno-racial status hierarchies elsewhere in the world. We consider the role of these hierarchies in organizing and stabilizing exploitative economic arrangements. Special attention is devoted to endogamous kinship systems, understood as social structures based ultimately on group-wise hoarding of wealth and social prerogatives, and requiring high degrees of intergenerational sexual control.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** 6 quizzes (not graded)	6 C

Course: Seminar	2 WLH

Examination requirements: Students understand the basic principles of socio-cultural and socio-economic differentiation and hierarchisation in Indian society and can relate them to social, cultural, economic and historical contexts; can reflect critically on the underlying theorical concepts and their role in both the societal praxis and the anthropological understanding of power.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Nathaniel Pemberton Roberts
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.033: Studies in the Anthropology of Power II: the Social Organisation of Production and Reproduction**	6 C 4 WLH

Learning outcome, core skills: This module familiarizes students with the social organization of production, reproduction, and exchange. It draws on studies in the anthropology of inequality and economic anthropology, and uses examples from India and a broad range of social formations, from hunter-gatherer to modern market economies. We cover gendered divisions of labor and the distinctions among wage labor, feudal service, debt bondage, slavery, and domestic production. We also consider different models of exchange, such as generalized reciprocity, redistribution, and negative reciprocity.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** 10 position papers, each 1-2 pages (not graded)	6 C

Course: Seminar	2 WLH

Examination requirements: Students understand the basic principles of the social organisation of production and reproduction and can relate them to social, cultural, economic and historical contexts in a range of social formations; and can analyse concrete examples of the relationship between the social organisation of production and reproduction, structures of inequality and economic processes.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Nathaniel Pemberton Roberts
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.034: Theories and Methods in Social-Cultural Anthropology I: Ethnography**	6 C 4 WLH

Learning outcome, core skills: This module introduces students to the empirical backbone of social and cultural anthropology: the practice of ethnographic fieldwork. What unique reality does fieldwork claim to discover, and on the basis of what evidence? How does ethnographic fieldwork differ from mere “qualitative research”? What are the ethical obligations of the researcher to his or her subjects? And, most importantly, how does one prepare for ethnographic research and what methods does one use? Students who successfully complete this module will receive the basic training needed to begin ethnographic research. They will also acquire some of the tools needed to critically evaluate the use of ethnographic evidence in published research.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung	2 WLH
Examination: Research project proposal (15 pages max.) (max. 15 pages), not graded **Examination prerequisites:** Participation in six practical exercises in ethnographic research	6 C

Course: Seminar	2 WLH

Examination requirements: Students gain knowledge of theoretical, methodological and epistemological aspects of ethnographic fieldwork from an anthropological perspective and practical skills important to design, undertake and reflect ethnographic fieldwork. These skills will be acquired by completing a series of collaborative or individual exercises.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Nathaniel Pemberton Roberts
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.035: Theories and Methods in Social-Cultural Anthropology II: Anthropology as Social Science**	6 C 4 WLH

Learning outcome, core skills: This module introduces students to the major theoretical frameworks of social science, with special reference to social and cultural anthropology. What does it mean to scientifically study society? How does social science differ from natural science? What unique reality does social science claim to discover, and on the basis of what evidence? Major themes include the distinction between methodological individualism and holism, the structure–agency problem, functionalism, explanation versus interpretation, and theories of causation.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung	2 WLH
Examination: Examination-like term paper (max. 20 pages) **Examination prerequisites:** 10 position papers, each 1 page (not graded)	6 C

Course: Seminar	2 WLH

Examination requirements: Expected outcomes include knowledge of the major theoretical, methodological and epistemological themes of anthropology as a social science as well as an understanding of the underlying epistemological framework and implicit social ontologies of arguments in the social sciences.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Nathaniel Pemberton Roberts
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.036: Theory and Methods in Modern Indian Studies I: History and Society (Concepts)**	6 C 4 WLH

Learning outcome, core skills: The students acquire the abilities to analyze and outline a set of interrelated and theories of history and society and to assess critically their relevance and heuristic potential for the development of specific qualitative research projects in history and social sciences. They learn to distinguish the argumentative architecture of complex theoretical texts and extract key arguments. They also acquire the ability to examine the internal coherence and logical consistency of the argumentative architecture and the key arguments of these texts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Examination: term paper (task: conspectus of readings (max. 15 pp.)	6 C

Course: Übung	2 WLH

Examination requirements: The students are familiar with the central theoretical debates in a particular field of qualitative historical and social science research. They have acquired the ability to organize and present the argumentative architecture and key arguments of a complex theoretical text in the form of a conspectus that facilitates future use and application to their own specific research interests.	

Admission requirements: M.MIS.100 or M.MIS.200	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ravi Ahuja
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.037: Theory and Methods in Modern Indian Studies I: History and Society: Case Studies**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
The students acquire the abilities to analyze and outline a set of interrelated and theories of history and society and to assess critically their relevance and heuristic potential for the development of specific qualitative research projects in history and social sciences. They learn to distinguish the argumentative architecture of complex theoretical texts and extract key arguments. They also acquire the ability to critically and creatively apply the argumentative architecture and the key arguments of relevant theories to specific problems of South Asian history and society.	Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Examination: term paper (task: thematic case study (max. 15 pp.))	6 C

Course: Übung	2 WLH

Examination requirements:	
The students are familiar with the central theoretical debates in a particular field of qualitative historical and social science research. They have acquired the ability to use concepts that have been developed in these debates critically for the analysis of a specific research problem of South Asian history and society in the form of a case study.	

Admission requirements: M.MIS.100 or M.MIS.200	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ravi Ahuja
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.038: Topics in Modern Indian Studies: Related Fields I**	9 C 4 WLH

Learning outcome, core skills: The students acquire knowledge of specific aspects and questions of a research field in social sciences and/or the humanities related to Modern Indian Studies. They train their interdisciplinary perspectives and are able to apply these critically to the academic literature by discussing subject-specific topics and defending their arguments independently.	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Lecture or Seminar or Exercise	2 WLH
Course: Seminar or Exercise or Self Study or Directed Reading Course	2 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 15 S.) oder Hausarbeit (max. 20 S.) oder Klausur (90 Min.) oder Portfolio (max. 20 Seiten)	9 C

Examination requirements: The students know the relevant academic literature of selected topics related to Modern Indian Studies in a research field in social sciences and/or the humanities; are able to apply these to different questions across different disciplines; are able to develop, present, and defend their own theses.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** PD Dr. Michael Dickhardt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.039: Topics in Modern Indian Studies: Related Fields II**	6 C 2 WLH

Learning outcome, core skills: The students acquire knowledge of specific aspects and questions of a research field in social sciences and/or the humanities related to Modern Indian Studies. They train their interdisciplinary perspectives and are able to apply these critically to the academic literature by discussing subject-specific topics and defending their arguments independently.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Lecture or Seminar or Exercise	2 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 15 S.) oder Hausarbeit (max. 20 S.) oder Klausur (90 Min.) oder Portfolio (max. 20 Seiten)	6 C

Examination requirements: The students know the relevant academic literature of selected topics related to Modern Indian Studies in a research field in social sciences and/or the humanities; are able to apply these to different questions across different disciplines; are able to develop, present, and defend their own theses.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** PD Dr. Michael Dickhardt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.040: Topics in Modern Indian Studies: Culture, Society, State and History**	6 C 4 WLH

Learning outcome, core skills: Students gain in-depth knowledge of specific aspects and questions of modern Indian studies related to culture, society, state and history from an interdisciplinary perspective, and are able to apply these critically to the academic literature as well as examine them on the basis of primary sources in the methodological framework of different disciplines. They are familiar with the current state of research on the subject presented to them, and are able to discuss subject-specific topics and defend their arguments independently.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 10 Seiten)	6 C

Course: Übung	2 WLH

Examination requirements: The students know the relevant academic literature of select topics of Modern Indian Studies related to culture, society, state and history and are able to apply these to different aspects and problems of different disciplines. They are able to develop their own theses and can present and defend them. They have in-depth knowledge of methods of modern Indian Studies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** PD Dr. Michael Dickhardt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.100: Interdisciplinary Studies of Modern India I**	9 C 3 WLH

Learning outcome, core skills: This module constitutes the first part of a year-long interdisciplinary foundation course. Students: • acquire an understanding of the central academic debates taking place in the disciplines involved, and they learn to critically assess and independently analyse them; • are enabled to independently analyse questions regarding core problems of Indian Studies from the perspectives of the various disciplines involved; • are familiarised with the methods and resources used in Indian Studies and enabled to use them independently.	**Workload:** Attendance time: 42 h Self-study time: 228 h

Course: Seminar (Seminar)	1 WLH
Course: Seminar (Seminar)	1 WLH
Course: Seminar (Seminar)	1 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Regular attendance	9 C

Examination requirements: The students are able to: • critically assess and independently analyse central academic debates taking place in the disciplines involved; • independently analyse core problems of Indian Studies from the perspectives of the various disciplines involved; • employ the resources used in Indian Studies independently.	

Admission requirements: None	**Recommended previous knowledge:** None
Language: English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.MIS.200: Interdisciplinary Studies of Modern India II**	9 C 3 WLH

Learning outcome, core skills: This module constitutes the second part of a year-long interdisciplinary foundation course. Students: • acquire in-depth knowledge of the academic debates taking place in the various disciplines of India-related research, and they learn to critically assess and independently analyse them; • are enabled to independently analyse questions regarding problems of Indian Studies from the perspectives of the various disciplines involved; • are familiarised with the methods and resources used in Indian Studies and enabled to use them independently.	**Workload:** Attendance time: 42 h Self-study time: 228 h

Course: Seminar (Seminar)	1 WLH
Course: Seminar (Seminar)	1 WLH
Course: Seminar (Seminar)	1 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Regular attendance	9 C

Examination requirements: The students are able to: • critically and independently analyse their newly acquired in-depth knowledge regarding the academic debates taking place in the related disciplines; • independently analyse problems of Indian Studies from the perspectives of the various disciplines involved; • employ the resources used in Indian Studies independently.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.MIS.211: Diversity and Inequality: Comparative Approaches: Case Studies**	6 C 4 WLH

Learning outcome, core skills: Students analyse social and economic differences in India from a comparative perspective, analyse the foundations and history of globally influential theories of social and economic differences, analyse one research topic and relevant case studies using a selected comparative approach and place this approach in the global political context.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Masterseminar oder Vorlesung	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (max. 10 pages)	6 C

Examination requirements:
Students demonstrate the ability to:

- relate social and economic differences in India to similar phenomena in other parts of the world using comparative perspectives,
- explicate the impact of globally influential theories of social and economic differences on developments in South Asia,
- explain positive and negative effects of a change in conceptions and approaches of economic policies on specific policies and political systems,
- analyse a research topic and relevant case studies using a selected comparative approach and place this approach in the global political context,
- and develop and present comparative research questions.

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.212: Diversity and Inequality: Comparative Approaches**	6 C 4 WLH

Learning outcome, core skills: Students analyse social and economic differences in India from a comparative perspective, analyse the foundations and history of globally influential theories of social and economic differences, work with various empirical data to identify the explanatory potential and drawbacks of different comparative methods, place comparative approaches in the global political context, and analyse the development of comparative research approaches.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Masterseminar oder Vorlesung	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (max. 10 pages)	6 C

Examination requirements: Students demonstrate the ability to: • relate social and economic differences in India to similar phenomena in other parts of the world using comparative perspectives, • explicate the impact of globally influential theories of social and economic differences on developments in South Asia, • identify the most suitable comparative methods for a given set of data, • explain positive and negative effects of a change in conceptions and approaches of economic policies on specific policies and political systems, • understand the political context of comparative approaches, • and develop and present comparative research questions.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Rupashree Viswanath-Roberts
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.215: Metamorphoses of the Political II**	6 C 4 WLH

Learning outcome, core skills: Students gain in-depth knowledge of the political changes in colonial and post-colonial India as well as interdisciplinary debates on Indian politics, know comparative and theoretical debates on politics, can present theoretical and empirical studies on Indian politics from the perspective of different disciplines and methodological approaches, and learn how to conceptualise a research project on Indian politics.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (max. 10 pages)	6 C

Examination requirements: Students have an in-depth knowledge of primary sources and secondary literature on Indian politics and know how to analyse them. They are expected to apply theoretical arguments and to relate them to the current state of research, be able to work with literature and methods from different disciplines, and to write critical reviews and summaries of the course readings and related literature expanding the scope of the course.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.216: Metamorphoses of the Political II: Case Studies**	6 C 4 WLH

Learning outcome, core skills: Students have an in-depth knowledge of primary sources and secondary literature on Indian politics and know how to analyse them. They are expected to apply theoretical arguments and relate them to individual case studies, be able to work with literature and methods from different disciplines, and to write critical reviews and summaries of the course readings and related literature expanding the scope of the course.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	2 WLH
Examination: Term Paper (max. 10 pages)	6 C

Examination requirements: Students have an in-depth knowledge of primary sources and secondary literature on Indian politics and know how to analyse them. They are expected to apply theoretical arguments and to relate them to the current state of research, be able to work with literature and methods from different disciplines, and to write critical reviews and summaries of the course readings and related literature expanding the scope of the course.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Srirupa Roy
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.218: Media and the Public Sphere in Modern India**	6 C 4 WLH

Learning outcome, core skills: In this module students learn about the modern media and the public sphere related to India. The students have an understanding of the particularities of media and the public sphere in modern societies; are familiar with theoretical approaches relevant to the research on media and the public sphere and are able to apply these approaches to various regional and societal contexts; have knowledge about crucial current issues related to media in modern India and how these are dealt with in different scientific disciplines; have an understanding of the social relevance of media and the public sphere in modern India.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (15 p. max.) or essay (15. p. max.)	6 C

Examination requirements: The students are able to explain perspectives related to the media used to analyse society, culture and politics in modern India; know how to reflect on theoretical approaches relevant to an understanding of media and the public sphere and how to apply such theoretical approaches to various regional and societal contexts; analyse the social relevance of media and the public sphere in modern India.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Patrick Peter Eisenlohr
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.219: Media and the Public Sphere in Modern India: Case Studies**	6 C 4 WLH

Learning outcome, core skills: In this module students learn about the modern media and the public sphere related to India. The students have an understanding of the particularities of media and the public sphere in modern societies; are familiar with theoretical approaches relevant to the research on media and the public sphere and are able to apply these approaches to various regional and societal contexts; have knowledge about crucial current issues related to media in modern India and how these are dealt with in different scientific disciplines; have an understanding of the social relevance of media and the public sphere in modern India.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Seminar	2 WLH
Course: Übung	2 WLH
Examination: Portfolio (15 p. max.) or essay (15. p. max.)	6 C

Examination requirements: The students are able to explain perspectives related to the media used to analyse society, culture and politics in modern India; know how to reflect on theoretical approaches relevant to an understanding of media and the public sphere and how to apply such theoretical approaches to various regional and societal contexts; analyse the social relevance of media and the public sphere in modern India.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Patrick Peter Eisenlohr
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.220: Capitalism and Social Transformation in Modern India**	6 C 3 WLH

Learning outcome, core skills: Students get familiarised with the integration of the modern Indian society in the capitalistic world economy and the related processes of commodification, socio-structural transformation and constellations of societal conflicts. Students learn to understand basic processes of capitalistic transformation and their consequences for modern societies; get familiarised with various relevant theoretical approaches and learn the limitations of these theories for analyzing specific regional contexts; gain insight in current debates in different disciplines on the relationship of capitalism and social transformation in modern India; know how to analyse concrete societal phenomena against the background of theoretical debates and relevant research literature on modern India.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Referat (ca. 15 Min.) mit schriftlicher Ausarbeitung (max. 10 Seiten)	6 C

Examination requirements: Students have to be able to: • reflect critically and apply selectively theoretical approaches relevant to understand basic processes of capitalistic transformation and their consequences for modern Indian societies; • present in detail the specific characteristics of capitalist transformation in the context of Indian society; • and examine the relevance of these transformation processes for concrete social phenomena in modern India.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ravi Ahuja
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.MIS.221: Capitalism and Social Transformation in Modern India: Case Studies**	6 C 3 WLH

Learning outcome, core skills: Students get familiarised with the integration of the modern Indian society in the capitalistic world economy and the related processes of commodification, socio-structural transformation and constellations of societal conflicts. Students learn to understand basic processes of capitalistic transformation and their consequences for modern societies; get familiarised with various relevant theoretical approaches and learn the limitations of these theories for analyzing specific regional contexts; gain insight in current debates in different disciplines on the relationship of capitalism and social transformation in modern India; know how to analyse specific case studies by working with a particular theoretical approach.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Seminar	2 WLH
Course: Übung	1 WLH
Examination: Term Paper (max. 15 pages)	6 C

Examination requirements: Students have to be able to: reflect critically and apply selectively theoretical approaches relevant to understand basic processes of capitalistic transformation and their consequences for modern Indian societies; present in detail the specific characteristics of capitalist transformation in the context of Indian society; and examine the relevance of these transformation processes for a specific case study.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ravi Ahuja
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.Mat.3110: Higher analysis**	9 C 6 WLH

Learning outcome, core skills: **Learning outcome:** Weighted differently depending on the current course offer, after having successfully passed the module, students are familiar with basic principles of functional analysis respectively the description of linear elliptical differential equations in functional analysis. They • are familiar with the most known examples of function and sequence spaces like spaces of continuous functions, Lp, lp and Sobolev spaces on bounded and unbounded areas; • identify compactness of operators and analyse the solvability of general linear operator equations, especially of boundary value problems for linear elliptical differential equations with variable coefficients with the aid of the Riesz Fredholm theory; • analyse the regularity of solutions of elliptical boundary value problems inside the domain in question and on its boundary; • use basic theorems of linear operators in Banach spaces, especially the Banach-Steinhaus theorem, the Hahn-Banach theorem and the open mapping theorem; • discuss weak convergence concepts and basic characteristics of dual and double-dual spaces; • are familiar with basic concepts of spectral theory and the spectral theorem for bounded, self-adjoint operators. **Core skills:** After having successfully completed the module, students will be able to • formulate and analyse differential equations and other problems in the language of functional analysis; • identify and describe the relevance of characteristics of functional analysis like choice of a suitable function space, completeness, boundedness or compactness; • evaluate the influence of boundary conditions and function spaces for existence, uniqueness and stability of solutions of differential equations.	**Workload:** Attendance time: 84 h Self-study time: 186 h

Course: Functional analysis / Partial differential equations (Lecture)	4 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** M.Mat.3110.Ue: Achievement of at least 50% of the exercise points and presentation, twice, of solutions in the exercise sessions	9 C

Course: Functional analysis / Partial differential equations - exercise session (Exercise)	2 WLH

Examination requirements:	

Proof of the advanced knowledge about functional analysis or partial differential equations	

Admission requirements: none	**Recommended previous knowledge:** B.Mat.0021, B.Mat.0022, B.Mat.1100
Language: English	**Person responsible for module:** Dean of studies
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 4 - 6; Master: 1 - 4
Maximum number of students: not limited	

Additional notes and regulations:

- **Instructor:** Lecturers at the Mathematical Institute or at the Institute of Numerical and Applied Mathematics
- **Written examination:** This module can be completed by taking a lecture course counting towards the modules B.Mat.2100 or B.Mat.2110. Compared to the exams of the modules B.Mat.2100 respectively B.Mat.2110, exams of the module "Higher analysis" have a higher level of difficulty and test advanced knowledge.
- **Exclusions:** The module "Higher analysis" cannot be completed by taking a lecture course that has already been accounted in the Bachelor's studies.

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1001: Introduction to Biophysics**	6 C 6 WLH

Learning outcome, core skills:	**Workload:**
After attending this course, students will have basic knowledge of • the construction of cells and the function of the components • transport phenomena on small length scales, derivation and solution of the diffusion equation • laminar hydrodynamics and its application in biological systems (flow, swimming, motility) • reaction kinetics and cooperativity, including enzymes • non-covalent interaction forces • self-assembly • biological (lipid) membrane contruction and dynamics • biopolymer physics and cytoskeletal filaments, including filament and cell mechanics • neurobiophysics • experimental methods, including state-of-the-art microscopy Learning outcomes: After completing this course students will understand the fundamental principles necessary to study the physics of biological systems. They will have a good grounding in both theoretical and experimental methods and their applications.	Attendance time: 84 h Self-study time: 96 h

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1002: Introduction to Physics of Complex Systems**	6 C 6 WLH

Learning outcome, core skills: This course is an introduction to the tools and techniques used to analyse dynamical systems. The fundamental theories are applied to real-world examples e.g. models relevant to climate change, ecology and epidemics. Learning outcomes: On completion of this module students will have a sound knowledge of essential methods and concepts from Nonlinear Dynamics and Complex Systems Theory, including practical skills for analysis and simulation (using, for example, the programming language python) of dynamical systems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Introduction to Physics of Complex Systems (Lecture)	4 WLH
Examination: written examination (120 Min.) or oral examination (approx. 30 Min.) **Examination prerequisites:** At least 50% of the homework exercises have to be solved successfully. **Examination requirements:** Knowledge of fundamental principles and methods of nonlinear physics, modern experimental techniques and theoretical models of complex systems theory.	6 C

Course: Introduction to Physics of Complex Systems (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic programming skills (for the exercises)
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 30	

Additional notes and regulations: Hybrid Learning - in-person in Göttingen with Live stream in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1005: Methods and Topics from Matter to Life**	10 C 4 WLH

Learning outcome, core skills: Learning outcomes Students will extend their knowledge in the physics of complex systems and biophysics through the study of selected advanced topics. The emphasis is on connecting textbook-level knowledge with current research though a combination of introductory presentations by the lecturer(s), student presentations, self-study and scientific group discussions. Students will learn and practise applying the concepts from the introductory lectures on biophysics and physics of complex systems to specific problems in the physics of living systems and to critically assess current scientific literature. Core skills: Critical evaluation of the scientific literature, scientific discussion and debate, presentation and communication skills, application of previous knowledge in unfamiliar contexts.	**Workload:** Attendance time: 56 h Self-study time: 244 h

Course: Methods and Topics from Matter to Life (Lecture,Seminar)	4 WLH
Examination: Oral examination (approx. 45 minutes) **Examination prerequisites:** Presentation (approx. 20 min.) **Examination requirements:** In the final oral examination, the students demonstrate their broad knowledge of biophysics and the physics of complex systems. They should show that they recognize the interrelationships between these areas and that they can place specific scientific questions within the context of these relationships.	10 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations: Hybrid Learning - in-person in Göttingen with Live stream in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1006: Modern Experimental Methods**	6 C 6 WLH

Learning outcome, core skills: Knowledge about advanced applied optics, radiation-matter interaction, spectroscopy, microscopy and imaging techniques in biophysics After taking this course, students will have quantitative insight into modern experimental techniques for biophysics, in particular optical techniques from basic to advances microscopy including confocal, light sheet and nanoscopy, optical spectroscopy including time-resolved techniques (transient absorption), single molecule techniques (e.g. FCS), electron microscopy, neutron and x-ray diffraction (including protein crystallography), NMR spectroscopy, and X-ray imaging. Students have the competence to reduce the complexity to underlying physics of radiation-matter interaction, to use Fourier-based methods in signal theory, concepts of wave and quantum optics, as well as quantitative data analysis. Hand-on examples of experimental applications and data recording will be introduced by short teaching units in the laboratory along with the courses, and a deeper unit of a 3 days practical in one of the technquies.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Modern Experimental Methods (Lecture,Exercise)	6 WLH
Examination: Written examination (120 min.) or oral examination (approx. 30 min.) or presentation (approx. 30 min., 2 weeks preparation time) **Examination requirements:** Theoretical and practical knowledge of modern methods of experimental methods of biophysics.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Tim Salditt
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 15	

Additional notes and regulations: in-person in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1007: Biochemistry and Biophysics**	6 C 7 WLH

Learning outcome, core skills: Molecular Biochemistry and Biophysics of different classes of biomolecules, modern biophysical methods for analysis of biomolecules. Work with state of the art equipment, critical review of current topics in biochemistry, detailed analysis of experiments and corresponding presentation, independent acquisition of expert knowhow from publications.	**Workload:** Attendance time: 98 h Self-study time: 82 h

Course: Biochemistry and Biophysics (Lecture) *Contents*: Spectroscopy of biomolecules (fluorescence, FT-IR, CD, UV/Vis), modern microscopic methods (optical microscopy, scanning probe microscopy), functional analysis of different classes of biomolecules.	1,5 WLH
Course: Biochemistry and Biophysics (Tutorial)	0,5 WLH
Course: Methods course: Biochemistry and Biophysics (Internship)	5 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** Basics in modern analysis methods used for biomolecules	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Claudia Steinem
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations: in-person in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1010: Synthetic Chemistry**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
The module is an introduction to synthetic chemistry. The aim is to introduce students to the fundamental concepts required to understand the chemistry necessary for futher study in matter to life and confidently engage with the research in Matter to Life which makes use of synthetic chemistry techniques. Learning Outcomes: Upon successful completion of the module, students will have a basic understanding of reaction mechanisms in classical synthetic chemistry. They are able to assess the possible reactivity of individual chemical groups and thus establish reaction mechanisms of chemical substances and have an idea of the experimental implementation of these reactions. They can understand reaction mechanisms and assess their relevance.	Attendance time: 56 h Self-study time: 124 h

Course: Synthetic Chemistry *Contents*: The course covers the fundamentals of organic and inorganic chemistry. In the inorganic-chemical part knowledge about metal ions in biological systems and therefore especially basic concepts of coordination chemistry with transition metals and lanthanides are taught, where thermodynamics and kinetics of complex formation play an important role. In the organic chemistry part, knowledge and mechanistic understanding of important organic reactions are taught. Not only basic organic reaction mechanisms but also bioinorganic topics are covered.	3 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination requirements:** • basic understanding of reaction mechanisms in classical synthetic chemistry • able to assess the possible reactivity of individual chemical groups • understand reaction mechanisms and assess their relevance	6 C

Course: Synthetic Chemistry (Tutorial) In-person in Heidelberg and Göttingen OR hybrid	1 WLH

Admission requirements: none	**Recommended previous knowledge:** MtL Chemistry Preparation Course
Language: English	**Person responsible for module:** Franziska Thomas Peter Comba
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1

Maximum number of students: 30	

Additional notes and regulations:
Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1011: Bioengineering/Synthetic Biology**	5 C 3 WLH

Learning outcome, core skills: Upon completion of the module, students will be able to analyze and design nucleic acid and protein structures, determine biophysical properties of such structures, estimate relevant scales, simulate the dynamic behavior of synthetic biological systems, and understand their function. Upon successful completion of the module, students have 1. a detailed understanding of quantitative aspects of gene expression and gene regulatory processes; 2. an overview of the main research directions within synthetic biology and the major related technologies; 3. the ability to apply their knowledge to design simple gene circuits themselves; 4. a very good understanding of nonlinear dynamics and dynamic systems in synthetic biological systems and the ability to independently analyze dynamical systems; 5. a good understanding of the role of stochastic processes in synthetic biology and key analytical methods. The students are able to analyze and simulate stochastic processes in the computer model; 6. the ability to assess and evaluate current developments in synthetic biology	**Workload:** Attendance time: 42 h Self-study time: 108 h

Course: Synthetic biology (Lecture) *Contents*: Areas of specialization in this course include biophysical and biochemical principles of synthetic biology, DNA nanotechnology, RNA and protein design, gene regulation and synthetic genetic circuits, description of biological dynamic systems, the use of cell-free systems, and the production of artificial cells. Students will have the opportunity to discuss and develop projects related to the application of nanotechnologies to living organisms and life-like systems. Students will be introduced to modeling biological systems and bioinformatics. The course also provides the foundation for describing and mastering bioengineering technologies for diagnosing and developing molecular systems with potential biomedical applications. Students will gain a focused overview of biomolecular principles and methods and computational design and analysis. Essential structural properties of biomolecules (proteins, peptides, nucleic acids) that underlie their wide structural and functional diversity in nature are discussed. Students will gain an overview of the fundamental concepts necessary to describe the effect of the structure and thermodynamics of these biomolecules on their stability, dynamics, and function. Students will also learn to analyze biological issues from the standpoint of systems theory and dynamical systems. They will gain insight into the fundamentals necessary to define and develop rational engineering strategies for bionanotechnology and synthetic biology.	2 WLH
Course: Synthetic Biology (Exercise)	1 WLH

Examination: Written Examination (120 minutes) or Oral Examination (approx. 25 minutes) **Examination requirements:** biomacromolecules, biological nanostructures, molecular machines and devices, chemical reaction networks, synthetic gene circuits, design of dynamic functions and behaviors, cell-free synthetic biology and artificial cells	5 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of molecular biology, biophysics, and mathematics is helpful.
Language: English	**Person responsible for module:** Prof. Dr. Fritz C. Simmel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1
Maximum number of students: 30	

Additional notes and regulations:
Distance Learning with live stream to Göttingen and Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1012: Biophysics and Physical Chemistry of Life**	8 C 8 WLH

Learning outcome, core skills: After successfully passing the module, students will have gained a basic understanding of advanced physical chemistry in the context of biological systems and will be able to describe the concepts of macromolecular structures and their interfacial chemistry. They will also be able to use concepts and methods of physical chemistry to propose possible research experiments to address cross-disciplinary research questions in the context of MtL.	**Workload:** Attendance time: 112 h Self-study time: 128 h

Course: Biophysics and Physical Chemistry of Life (Lecture) *Contents*: The course provides knowledge of physical chemistry as it relates to biological systems. It provides an introduction to advanced topics in the physical chemistry of life: biochemical thermodynamics, macromolecular structures, and interfacial chemistry. The course will include aspects of the physical chemistry of synthetic and natural macromolecules. Special attention will be given to the kinetics of synthetic polymerization reactions and biopolymer synthesis, and to inter- and intramolecular interactions between macromolecules, the molecular details and biological implications of which will be discussed. With respect to interfaces, a major aspect of this course is to illustrate the importance of interfacial processes in chemistry and in relation to chemical engineering, cell biology, materials science, and physics. Methods of surface modification, including specific functionalizations and strategies for patterning with emphasis on self-assembly processes will be presented. The characterization and role of possible intermolecular forces in interfacial interactions will also be addressed. All concepts already presented will be linked in a detailed discourse on exemplary biological interfaces, such as lipid vesicles with emphasis on their morphological complexity.	4 WLH
Examination: Written examination (120 min.) or oral examination (approx. 30 min.) **Examination requirements:** Basic understanding of physical and chemical principles governing biological systems at multiple scales. Ability to apply quantitative and theoretical methods for analyzing biomolecular structures, non-equilibrium processes, and self-organizing phenomena in living systems.	6 C

Course: Interdisciplinary perspectives on Biology (Seminar) *Contents*: 1. Engage Actively: Develop active engagement with academic literature by critically reading and discussing recent publications. 2. Understand and Integrate Knowledge: Demonstrate a thorough understanding of key publications and integrate this knowledge with prior learning, connecting concepts across different fields.	2 WLH

3. Facilitate Scientific Discussions: Participate in and contribute to scientific discussions, drawing inspiration from recent discoveries to explore and analyze complex ideas.	
Examination: Written examination (120 min.) or oral examination (approx. 30 min.)	2 C

Course: Biophysics and Physical Chemistry of Life (Tutorial) in-person in Heidelberg and Göttingen	2 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Timo Betz Christine Selhuber-Unkel, Joachim Spatz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1 - 4
Maximum number of students: 30	

Additional notes and regulations:
Hybrid Learning/ in-person and Live stream OR only in-person

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1013: Macromolecular Structures and Functions**	5 C 8 WLH

Learning outcome, core skills: Upon completion of the module, students will be able to describe diverse synthesis and analysis methods of natural and synthetic macromolecules and will have experience in the synthesis of macromolecules as well as microflow technology.	**Workload:** Attendance time: 112 h Self-study time: 38 h

Course: Macromolecular Structures and Functions (Lecture) *Contents*: The course focuses on the multiplicity and diversity of macromolecular structures and their respective functionalities. Technical knowledge of synthesis, structural characterization and construction of functional properties is provided. This bridges the research field of synthetic polymers and their structure-property relationships on the one hand, and the chemistry of biological macromolecules on the other. Biological macromolecules are considered as part of modern materials (for example, as a component of a hybrid material) and at the same time as a prime example of molecularly programmable, complex and adaptable superstructures. Structural entanglements are covered in detail, starting from monomer linkages, non-covalent bonds and couplings across a distance of multiple bonds (colloidal forces and entropic forces) to organization at the macromolecular and supramolecular level (spiral structures, globules and other nano-objects with a defined secondary, tertiary or quaternary structure). The course provides in-depth knowledge of the synthesis of macromolecules with emphasis on sequence control, molecular weight, and macromolecular sterochemistry: These include (i) controlled and living chain polymerization by various mechanisms (initiated by ions, group transfer, radicals, or a complex insertion as in metathesis, metallocene, and Ziegler polymerization reactions); (II) step-growth syntheses such as advanced polycondensation reactions (so-called low-band-gap polymers, chain-growth polycondensation, condensation or addition in water, fragment condensation), solid-phase synthesis, and cascade synthesis as in dendrimers. Specifically for biomacromolecules, enzymatic methods for protein and nucleic acid production (PCR, rolling circle amplification, expressed protein ligation) and biotechnological syntheses (recombinant protein expression) are covered. The course provides important knowledge on methods for microfluidic encapsulation of nucleic acids for in vivo applications. The focus will be on silencing RNA (siRNA) as an important tool of RNA interference as well as induction of protein expression by messenger RNA (mRNA). There will also be a focus on teaching methods that allow conjugation of biological with synthetic building blocks (click chemistry reactions). A second focus will be on structure-property relationships related to molecular self-assembly in aqueous solutions, such as helical structures, protein chain folding, and nucleic acid structures (A-, B-, Z-DNA). It also teaches the next higher level of organization, globule and micelle formation, as well as the formation of structured networks by covalent and reversible gelation processes, and the self-assembly of block copolymers from more	4 WLH

than two block polymers. In addition to thermodynamic control, other ways to regulate self-assembly will be shown, including kinetic control and control by non-covalent chemistry, such as the interplay between covalent and non-covalent chemistry through reversible grouping, hydrophobic interactions, and directed formation of reversible bonds. In addition, the course addresses physical characterization methods necessary for monitoring synthesis at all structural levels, starting from NMR methods, optical spectroscopy and vibrational spectroscopy, to fluorescence methods such as FRET, to characterization of particle size and shape by scattering techniques and advanced microscopy methods (cryo-SEM and -TEM, scanning probe microscopy and advanced optical microscopy).	
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination prerequisites:** Active participation in the lab course **Examination requirements:** Basic understanding of synthesis and analysis methods of natural and synthetic macromolecules and the synthesis of macromolecules	5 C

Course: Macromolecular Structures and Functions (Internship)	4 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Andreas Herrmann
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 15	

Additional notes and regulations:
Lecture: Live stream in Heidelberg and Göttingen

Internship: in-person in Aachen at DWI

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1014: Bioconjugation & Imaging Chemistry**	3 C 2 WLH

Learning outcome, core skills: Upon successful completion of the module, students will have a basic understanding of the preparation and characterization of bioconjugates and their application as sensors and activators in biological systems for quantitative analysis of biological processes.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Bioconjugation & Imaging Chemistry (Lecture) *Contents*: The course deals with different types of molecular elements associated with biological vectors, where the biological vectors ensure that the elements are transported to specific cells (e.g. selective labeling of tumor cells for imaging or therapy; vectors: peptides, antibodies, antigens, nanoparticles). Molecular elements include optical, magnetic, and radiochemical probes. The synthesis of molecular elements and methods for binding the elements to biological vectors are outlined. Emphasis is placed on the fundamental principles of various probes (e.g., on/off optical sensors; paramagnetic probes in MRI imaging and structure determination of proteins in cells; radiopharmaceutical imaging and therapy). Many of these systems consist of ions of main group, transition, and rare earth metals. The basic principles of metal ion selectivity, prevention of transmetallation (chemical inertia under physiological conditions) are discussed, and emphasis is placed on the fundamental theory of metal-based systems with respect to sensors and activators.	2 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination requirements:** Basic understanding of the preparation and characterization of bioconjugates and their application as sensors and activators in biological systems for quantitative analysis of biological processes.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Peter Comba
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations: Hybrid Learning - in-person in Heidelberg with Live stream to Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1015: Genome Engineering**	4 C 4 WLH

Learning outcome, core skills: After successful completion of the module, students will have a basic understanding of genome engineering and will be able to critically read and evaluate publications in this field. They are able to apply methods for genome engineering.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Genome Engineering (Lecture) *Contents*: The Genome Engineering course provides an overview of the background and application of genomic technologies for reading and writing genomes as the basis of synthetic biology. The course includes an introduction to basic nucleic acid chemistry and function of DNA, as well as structural and functional aspects of genes and genome biology. Additional topics include: How is information encoded in the genome, methods for genome sequencing, and recent findings that enable whole genome sequencing and assembly. Methods for manipulating DNA will be presented, including DNA synthesis and the use of enzymatic methods for genetic engineering of simple and complex genomes. The course covers and discusses recent method developments in genome engineering, the discovery and development of CRISPR/Cas, its technologically generated versions that allow knockout of genes in genomes, site-specific insertion of mutations, and replacement of whole genes or chromosome segments. Also covered will be the application of genome engineering in biotechnology, diagnostics, and therapeutics, as well as in cell and tissue engineering and future applications of synthetic genomes. Classic publications of important discoveries as well as recent developments in genome engineering will be discussed. Also discussed will be ethical, legal, and societal implications of genome engineering. The module consists of lectures by various faculty members, as well as inverted classroom sessions focusing on case studies that present examples from the most current literature and actual faculty research. Students will receive the case studies prior to class. Students study the materials and are encouraged to propose experimental or theoretical strategies to address the issues. Together and in tutorials, questions raised are discussed and answered. Students apply what they have learned in a capstone project in which they independently complete a research project.	2 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) or Project Report (min 2 pages) **Examination prerequisites:** Regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** Basic understanding of genome engineering and associated methods.	4 C

Course: Genome Engineering (Internship)	2 WLH

Admission requirements:	**Recommended previous knowledge:**

none	none
Language: English	**Person responsible for module:** Michael Boutros
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 20	

Additional notes and regulations:

Lecture: Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Internship: in-person in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1016: Chemical Biology**	4 C 2 WLH

Learning outcome, core skills: Graduates of the module will be able to select and apply tools from chemistry, cell biology and biophysics to investigate issues at the molecular level.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Chemical Biology (Lecture) *Contents*: Chemical biology could also be described as the application of chemistry to the study of living systems in situ. Here, the goal is to develop tools to manipulate biological phenotypes and to visualize and quantify biochemical activities in vivo. Through discussion of a selection of important publications, the course provides an introduction to current chemical biology. The publications describe technologies or approaches that represent a conceptual advance, enabling the exploration of a biological question that could not be addressed using more traditional approaches. Since chemical biology is still a relatively young and dynamic field, the publications to be discussed will be adjusted from year to year. The following topics will be discussed in the course: (i) synthetic and genetically encoded probes; (ii) chemical biology of kinases; (iii) chemical labeling of proteins; (iv) semisynthesis of proteins; (v) genetic code expansion and artificial amino acids; (vi) chemical optogenetics; (vii) chemical genetics; (viii) targeted deconvolution of bioactive molecules; (ix) activity-based protein analysis; (x) fluorescent probes. The course requires that students read the underlying publications prior to class in order to participate in discussion.	2 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination requirements:** Basic knowledge of tools from chemistry, cell biology and biophysics to investigate issues at the molecular level.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Kai Johnsson Richard Wombacher
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:
In-person in Heidelberg, Hybrid upon request and approval of the lecturer

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1017: GlycoSciences**	3 C 2 WLH

Learning outcome, core skills: Upon successful completion of the module, students will have a basic understanding of the importance of sugars for interdisciplinary research. They are able to pose scientific questions and describe their research interests, place them in the context of current literature and present them.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: GlycoSciences (Seminar) *Contents*: This course is focused on the multidisciplinary field of sugar research. The course looks at the latest developments and cutting edge research on a specific topic in the field. In the first session, the group selects a specific research question to explore theoretically. The seminar provides students with the opportunity to work together to acquire literature knowledge, formulate research questions, and draft various parts of a research proposal.	2 WLH
Examination: Essays or oral presentation **Examination requirements:** Basic understanding of the importance of sugars for interdisciplinary research	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Heike Böhm
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations: interactive presentations, independent literature search. Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1019: Data Science & Simulations**	3 C 2 WLH

Learning outcome, core skills: Upon completion of the course, students will be able to select adequate computational techniques and apply appropriate computational models and algorithms to complex biological problems and assess the range of validity of each.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Data Science & Simulations (Lecture) *Contents*: The course covers computational methods for solving biological problems and designing synthetic life-like systems at various scales. The methods include physics-based approaches such as particle-based atomistic and mesoscopic simulations, as well as techniques in data-driven bioinformatics and machine learning. Physics-based approaches include recent advances in Monte Carlo, molecular dynamics, and Brownian dynamics simulations, as well as kinetic modeling. The course teaches data-driven techniques for analyzing next generation sequencing experiments, including transcriptome and single cell analysis. The overarching focus is on multi-scale approaches that bridge the molecular with the mesoscopic and ultimately the macroscopic scale. Topics are guided by examples from current research advances and challenges from recent literature or faculty research. For each case study topic dealing with a specific subset of computational techniques, the relevant physical, chemical, or mathematical principles are discussed. Explanatory material on the case study, relevant background, and a code or software example will be distributed prior to class. Practical applications in a computer laboratory complement the lectures. In the practical part, depending on the complexity of the computer-based method, (pseudo) code examples are developed in class or supplemented with critical components. Scientific software is also used in practical exercises to solve the case study problem. The range and possible pitfalls of the applied methods are critically examined.	1 WLH
Course: Data Science & Simulations (Exercise) Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen	1 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) or Project Report (min 2 pages) **Examination requirements:** Basic understanding of adequate computational techniques and appropriate computational models and algorithms to complex biological problems.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Michael Boutros

	Frauke Gräter
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 30	

Additional notes and regulations:
Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1020: Methods of quantitative analysis**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
The module is an introduction to synthetic chemistry. The aim is to introduce students to the fundamental concepts required to understand the chemistry necessary for futher study in matter to life and confidently engage with the research in Matter to Life which makes use of synthetic chemistry techniques. Learning Outcomes: Upon successful completion of the module, students will have a basic understanding of reaction mechanisms in classical synthetic chemistry. They are able to assess the possible reactivity of individual chemical groups and thus establish reaction mechanisms of chemical substances and have an idea of the experimental implementation of these reactions. They can understand reaction mechanisms and assess their relevance.	Attendance time: 28 h Self-study time: 62 h

Course: Methods of quantitative analysis (Lecture) *Contents*: The course covers modern analytical methods for the study of molecular structures. The importance of combining methods to cover all size scales of the object of study (from the molecular level to the mesoscopic level) to validate research hypotheses will be illustrated with examples from recent literature. The need to create reproducible and statistically significant data sets will be highlighted and discussed in the context of previous and current relevant literature. Through discussions of the use of high-resolution optical microscopy (e.g., STED microscopy) and electron microscopy for the study of biological systems, students will gain a detailed understanding of the complementary uses, as well as the advantages and disadvantages, of using light and electrons to study biological systems. The analytical capabilities of tunable high-energy radiation sources (synchrotron radiation and X-ray lasers), which combine imaging techniques with spectroscopic methods for chemical composition analysis, will be presented. As physical phenomena, diffraction and scattering are the fundamental principles of physical optics and thus relevant to interactions between acoustic and electromagnetic waves with molecules and particles. The physical principles of these phenomena will be taught and knowledge of basic and modern diffraction and scattering technologies will be reinforced in practical experiments. The module will also cover the theoretical background and methods for measuring the dynamics and kinetics of biomolecular reactions and time-dependent processes in living systems. The operation of lasers and their special role in modern biological research will be introduced. Various laser spectroscopy and scattering technologies will be discussed theoretically and demonstrated practically, with a focus on time-dependent processes. The methods and underlying theory of measuring fast and slow kinetics in biomolecular reactions will be discussed using examples from the literature. We will cover the formal kinetic description of fast chemical and biomolecular reactions (enzyme kinetics), as well as the statistical tools for studying diffusion and convection experimental data and the	1 WLH

experimental implementation of kinetic measurements from stopped-flow to pump-probe experiments. Again, the need to create reproducible and statistically significant data sets and discuss results in the context of the literature will be emphasized.	
Course: Methods of quantitative analysis (Practical course)	1 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination prerequisites:** Regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** • basic understanding of reaction mechanisms in classical synthetic chemistry • able to assess the possible reactivity of individual chemical groups • understand reaction mechanisms and assess their relevance	3 C

Admission requirements: none	**Recommended previous knowledge:** MtL Chemistry Preparation Course
Language: English	**Person responsible for module:** Hans-Robert Volpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:

Lecture: Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Internship: in-person in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1021: Synthetic Cells & Virology**	4 C 4 WLH

Learning outcome, core skills: Upon successful completion of the module, students will have an understanding of the synthesis and analysis of synthetic viruses and viral substructures (e.g., capsid shells and/or viral replication systems); they will also have state-of-the-art knowledge of synthesis tools and technologies for the production of such materials. They are able to design experiments for hierarchical assemblies of molecular and nanoscopic entities as the basis of life-like materials.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Synthetic Cells & Virology (Lecture) *Contents*: The course covers physical and chemical methods from the field of modern synthetic biology for the design and construction of synthetic viruses with desired functions and for the development of synthetic cells and tissues with lifelike properties. Cutting-edge research topics serve as a guiding thread and discussion throughout the course. In particular, these include modern methods of biofunctionalization as well as methods from the fields of microfluidics and protein engineering for the fabrication of lifelike machines, cells, and tissues. The course deals with modern technologies based on light and microfluidics which regulate self-assembly processes in the construction of lifelike compartments. Immunology, virology, and especially new synthetic biology approaches in these disciplines are among the greatest challenges in biomedical research today. At the same time, viruses are among the smallest biological objects with the ability to self-replicate in a more complex environment. This makes the construction of viruses and viral vectors with desired properties particularly promising, a reason why these methods are now used in applied biomedical research. The fact that viruses are foreign to their host has been instrumental in the discovery of a number of cellular processes and appears to be an optimal property for the construction of artificial cell-like systems that support their replication. The study of viral interactions with host cells and the immune system provides a variety of examples of situations in which quantitative, interdisciplinary approaches with extensive involvement of physics, chemistry, and technology have led to breakthrough technical advances in biomedical and clinical applications. Our approach aims at intervening in the life cycle of cells using molecular or nanoscopic systems, or even artificially engineered cells and viruses. This module will provide an overview of the most challenging and current research examples and will provide the chemical, physical, molecular biological and biochemical basis to describe research examples in synthetic virology. Theoretical knowledge will be complemented by hands-on experience in laboratory practicals, for example in microfluidics, viral vector development, or DARPin technology. The module will consist of lectures based on the concept of the inverted classroom teaching/learning method and will focus on "case studies" - in the sense of examples from the current literature or examples from the teacher's own research. Students	2 WLH

will engage with teaching materials, which will be handed out to them well in advance of the course in preparation for discussion, and will be encouraged to develop and present experimental and/or theoretical approaches to the problem. Subsequent course meetings and exercises will be used to discuss issues, deepen expertise, and develop research strategies, which can in turn be tested in exercises and laboratory practicals. Furthermore, the relationship between living and non-living matter will be part of the course material. In addition, students will be instructed in the design and construction of chimeric antigen receptors (CARs, also known as chimeric immunoreceptors) for use as engineered receptors to graft any specificity onto immune cells (T cells). These types of receptors are currently being tested in clinical trials for use against specific diseases.	
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination requirements:** Basic understanding of the synthesis and analysis of synthetic viruses and viral substructures as well as state-of-the-art knowledge of synthesis tools and technologies for the production of such materials. Ability to design experiments for hierarchical assemblies of molecular and nanoscopic entities as the basis of life-like materials.	4 C

Course: Synthetic Cells & Virology (Internship)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Heike Böhm Joachim Spatz
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:

Lecture: Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Internship: in-person in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1022: Supramolecular Chemistry**	5 C 4 WLH

Learning outcome, core skills:	**Workload:**
After successful participation in this course, the student will be able to: - Recall and understand the non-covalent interactions between molecules. - Recall and understand the thermodynamic driving force involved in assembly of supramolecular structures. - Molecularly design an amphiphile - Molecular design a self-assembly peptides - Molecularly design liquid crystals - Recall functions of self-assembled structures - Recall mechanisms involved in molecular machines.	Attendance time: 56 h Self-study time: 94 h

Course: Supramolecular Structure (Lecture) *Contents*: This course gives an overview of supramolecular chemistry, self- assembly of molecules, supramolecular materials and molecular machines. It is divided into 12 regular lectures (listed below) and three slots where students present their case studies. The lectures: 1. An introduction to Supramolecular Chemistry, Self-assembly, Supramolecular Materials and Molecular Machines. 2. Molecular non-covalent interactions 3. The thermodynamics of self-assembly 4. Catenanes, rotaxanes and knots 5. An introduction into the self-assembly of molecules 6. The self-assembly of amphiphiles 7. The self-assembly of peptides and proteins 8. The self-assembly of liquid crystals 9. Non-equilibrium self-assembly: energy landscapes of self-assembly 10. Supramolecular Materials: self-assembly into structures with function 11. Supramolecular Materials: self-assembled hydrogels 12. Supramolecular materials: liquid crystals. Teaching and learning methods: The module consists of a lecture and an exercise. After teaching the basics of supramolecular, non covalent interactions the topics are deepened on specific examples such as Amphiphiles, Peptides and Liquid Crystals. Thematic blocks on Non- Equilibrium self-assembly, self-assembly hydrogels and molecular machines complete the topics. The gradual structure should consolidate the learning experience. The contents of the lecture are conveyed through presentations. In addition, the students should work through relevant textbook chapters, which may	4 WLH

also be supplemented by further literature, e.g. selected journal articles. As part of the exercises, specific questions are answered and selected examples are worked on. This allows the students to deepen and work on topics and facts from the preliminary lecture.	
Examination: Written examination at the end of the course (70%; 90 min); Oral presentation during the course (30%) **Examination requirements:** In this exam, students should be able to show that they can distinguish between supramolecular polymers and classical polymers. They are able to name the unique properties of a supramolecular polymer and compare the advantages and disadvantages of these polymers. Students can describe possible polymerization mechanisms using examples. They are able to give examples of non-equilibrium self-assemblies, self-assembly hydrogels and molecular machines and to distinguish between them. Tasks are set that have to be answered using self-formulated texts, as well as multiple-choice tasks.	5 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Job Boekhoven
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:
Distance Learning with live stream to Göttingen and Heidelberg. Depending on number of participants lecturer will come on site for 1-2 lectures.

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1023: Theoretical Biophysics**	6 C 6 WLH

Learning outcome, core skills: After successful finishing of the module • the students will have advanced knowledge of theoretical biophysics, • the students will have practical experience with theoretical calculations of bio-systems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Theoretical Biophysics (Lecture) *Contents*: • Macromolecules - General properties of macromolecules: Freely jointed chain, the Gaussian chain model, elastic rod model, self avoiding chains, conformations and energy landscapes, macromolecules in solution, macromolecules at a surface - Intermolecular interactions and electrostatic screening - Helix-Coil transition - DNA melting -Polyelectrolytes: The Poisson-Boltzmann equation - Proteins: Protein folding numerical approaches, folding as a spin glass problem, protein-protein interactions - Chromatin: Chromatin models, force-extension behaviour of folded macromolecules - Genes: Gene expression and genetic code • Membranes - Self–assembly of micelles - Surface behaviour of lipids: differential geometry of surfaces, membrane elasticity and bending energy, membrane fluctuations - Structure of Lipids -Cell Membranes • Transport - Diffusion - Polymer dynamics: Rouse Model, hydrodynamic interactions • Networks - Gels - Metabolic Networks: Boolean networks, scale-free networks, robustness of networks • Molecular Motors - Polymerization of cell filaments - Brownian ratchet - A basic model of a molecular motor	4 WLH

• Statistical Analysis - Bayesian Analysis - Monte Carlo Methods - Hidden Markov Models	
Examination: Oral exam (approx. 30 min) **Examination requirements:** Basic understanding of general properties of macromolecules, intermolecular interactions, protein approaches and Chromatin models, polymer dynamics, metabolic networks, molecular motors and statistical analysis.	6 C

Course: Theoretical Biophysics Exercise (Exercise) *Contents*: Practical experience with theoretical calculations of bio-systems. Exercises with homework.	2 WLH

Admission requirements: none	**Recommended previous knowledge:** • basics of classical mechanics, electrodynamics and statistical mechanics
Language: English	**Person responsible for module:** Ulrich Schwarz
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:
In-person in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1024: Quantitative Analysis of the Chemistry of Life**	6 C 4 WLH

Learning outcome, core skills: The module is an introduction to synthetic chemistry. The aim is to introduce students to the fundamental concepts required to understand the chemistry necessary for futher study in matter to life and confidently engage with the research in Matter to Life which makes use of synthetic chemistry techniques. Learning Outcomes: Upon successful completion of the module, students will have a basic understanding of reaction mechanisms in classical synthetic chemistry. They are able to assess the possible reactivity of individual chemical groups and thus establish reaction mechanisms of chemical substances and have an idea of the experimental implementation of these reactions. They can understand reaction mechanisms and assess their relevance.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Quantitative Analysis of the Chemistry of Life *Contents*: The course covers the fundamentals of organic and inorganic chemistry. In the inorganic-chemical part knowledge about metal ions in biological systems and therefore especially basic concepts of coordination chemistry with transition metals and lanthanides are taught, where thermodynamics and kinetics of complex formation play an important role. In the organic chemistry part, knowledge and mechanistic understanding of important organic reactions are taught. Not only basic organic reaction mechanisms but also bioinorganic topics are covered.	4 WLH
Examination: Written Examination (120 min) or Oral Examination (approx 30 min) **Examination requirements:** • basic understanding of reaction mechanisms in classical synthetic chemistry • able to assess the possible reactivity of individual chemical groups • understand reaction mechanisms and assess their relevance	6 C

Admission requirements: none	**Recommended previous knowledge:** MtL Chemistry Preparation Course
Language: English	**Person responsible for module:** Franziska Thomas Peter Comba
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1
Maximum number of students: 30	

Additional notes and regulations:

Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1025: Spectroscopy of Biomolecules**	6 C 7 WLH

Learning outcome, core skills: **Learning Objectives:** By the end of the course, students will be able to: • Understand the fundamentals of the interaction of light and matter. • Apply modern biophysical techniques such as UV/Vis spectroscopy, circular dichroism (CD), fluorescence spectroscopy, and ERP and NMR spectroscopy to analyze biomolecular systems and interpret the corresponding data. • Operate advanced microscopic methods, including contrast methods for biological samples, light paths, fluorescent microscopy, confocal, and high-resolution microscopy, and functional analysis of different classes of biomolecules, and interpret corresponding data. • Critically evaluate current research topics in biochemistry and biophysics, identifying trends, challenges, and methodological approaches. • Conduct detailed analyses of experiments and present findings clearly and accurately in oral and written formats. • Independently acquire expert-level knowledge from scientific publications and integrate it into experimental design and interpretation. • Demonstrate proficiency in using state-of-the-art laboratory equipment, adhering to best practices in data collection and analysis.	**Workload:** Attendance time: 98 h Self-study time: 82 h

Course: Spectroscopy of Biomolecules (Lecture) *Contents*: Spectroscopy of biomolecules (fluorescence, FT-IR, CD, UV/Vis), modern microscopic methods (optical microscopy, scanning probe microscopy), functional analysis of different classes of biomolecules.	1,5 WLH
Course: Spectroscopy of Biomolecules (Tutorial)	0,5 WLH
Course: Methods course: Spectroscopy of Biomolecules (Internship)	5 WLH
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** Regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** Basics in modern analysis methods used for biomolecules	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Claudia Steinem
Course frequency: every 4th semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations:
in-person in Göttingen

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1026: Biofabrication & Tissue Engineering**	6 C 3 WLH

Learning outcome, core skills: After successfully passing the module, the students will have obtained a fundamental understanding of the principles of biofabrication in vitro and in situ with focus on tissue engineering applications, and will be knowledgeable on which materials and cell types are the most suitable for different medical applications. They will be able to apply biofabrication and 3D cell culture techniques.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Biofabrication & Tissue Engineering (Lecture) *Contents*: The *Biofabrication & Tissue Engineering* course will provide an overview of modern biofabrication technologies used to design and fabricate engineered tissues in vitro and in situ. The course will introduce nozzle-based biofabrication methods, such as extrusion and inkjet printing, as well as nozzle-free methods like volumetric printing. The course will cover the use of natural and synthetic materials as inks used in biofabrication, and discuss their advantages and disadvantages. The course will also cover the basics of 3D cell culture and its demands for different medical applications. The first 4 lectures of the course will provide the students with the basics on the topics of biofabrication and tissue engineering, whereas the lectures 5-8 will be given in the inverted classroom format. In the inverted classroom lecture, the students will have the opportunity to discuss state-of-the-art scientific articles of the most recent discoveries in the field of biofabrication. Practical training in the last part of the course (week 9 -12) will include handling of various hydrogels and printing using different techniques, as well as cell culture and bioprinting with cells.	2 WLH

Course: Biofabrication & Tissue Engineering (Internship)	1 WLH
Examination: Written examination (120 min) or oral examination (approx 30 min) **Examination prerequisites:** Regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** Basic understanding of the principles of biofabrication in vitro and in situ with focus on tissue engineering applications, and knowledgeable on which materials and cell types are the most suitable for different medical applications.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Daniela Duarte Campos
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	2
Maximum number of students: 30	

Additional notes and regulations:

Lecture: Hybrid Learning - in-person in Heidelberg with Live stream in Göttingen

Internship: in-person and inverted classroom in person in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1103: Remote Laboratory Work**	3 C 1 WLH

Learning outcome, core skills: An introduction to laboratory experiments performed remotely. Students will collaborate to operate a research microscope in person and remotely. They will collect data, analyse the resultant images and report their results. By the end of the module students will: Be familiar with the workings of a research microscope Understand and be compentent in using video particle tracking and image analysis Develop a data analysis pipeline Be able to collaborate in remote teams	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Remote Laboratory Work (Practical course)	
Examination: Written Report (max. 10 pages) **Examination requirements:** A written report demonstrating the successful use of advanced experimental methods to analyse systems relevant to Matter to Life.	3 C

Admission requirements: none	**Recommended previous knowledge:**
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1 - 2
Maximum number of students: 10	

Additional notes and regulations: Hybrid Learning - in-person in Göttingen and remote in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1104: Lab Rotation I**	13 C

Learning outcome, core skills: Students will work on a current scientific research project and be familiarized with an advanced topic in the field of Biophysics/Physics of Complex Systems. They will learn to successfully perform a sub-task within a larger research project and finally present the results to a professional audience. Students will be able to organize, conduct, evaluate and present small, manageable projects in the field of Biophysics/Physics of Complex Systems, obeying the rules of good scientific practice.	**Workload:** Attendance time: 0 h Self-study time: 390 h

Course: Lab Rotation in Biophysics and Physics of Complex Systems	WLH
Examination: written report (max. 10 pages) **Examination requirements:** Methods for in-depth familiarization in a scientific field of work, critical review of literature, scientific presentation, good scientific practice.	13 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics, Introduction to Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 3
Maximum number of students: 30	

Additional notes and regulations: Only for Matter to Life Students

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1105: Lab Rotation II**	13 C

Learning outcome, core skills: Students will work on a second scientific research project and will be familiarized with another advanced topic in the field of Biophysics/Physics of Complex Systems. They will learn to successfully perform a sub-task within a larger research project and finally present the results to a professional audience. Students will further improve their skills to organize, conduct, evaluate and present small, manageable projects in the field of Biophysics/Physics of Complex Systems, obeying the rules of good scientific practice.	**Workload:** Attendance time: 0 h Self-study time: 390 h

Course: Lab Rotation in Biophysics and Physics of Complex Systems II	WLH
Examination: written report (max. 10 pages) **Examination requirements:** Methods for in-depth familiarization in a scientific field of work, critical review of literature, scientific presentation, good scientific practice.	13 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Biophysics, Introduction to Physics of Complex Systems
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 3
Maximum number of students: 30	

Additional notes and regulations: Only for Matter to Life Students

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1106: Matter to Life Internship**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module, students should be competant to work within a research group on a topic related to matter to life. The students should independently familiarise themselves with the group's research topic and be able to perform research under supervision and as part of a team. The results of this work should be presented as a talk or poster.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Matter to Life Internship (Internship)	6 WLH
Examination: Poster presentation or oral presentation (30 minutes) **Examination prerequisites:** Regular participation in the lab course and report for the lab course (max. 20 pages) **Examination requirements:** Familiarity with and ability to apply advanced techniques to address research questions related to matter to life.	6 C

Admission requirements: This module can be selected only on the recommendation of a lecturer.	**Recommended previous knowledge:** None
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1107: Lab Rotation**	30 C 40 WLH

Learning outcome, core skills: Students will work on two connected scientific research projects and be familiarized with advanced topics in the field of Matter to Life. They will learn to successfully perform a sub-task within larger research projects and finally present the results to a professional audience. Students will be able to organize, conduct, evaluate and present small, manageable projects in the field of Matter to Life, obeying the rules of good scientific practice.	**Workload:** Attendance time: 560 h Self-study time: 340 h

Course: Lab Rotation (Practical course)	38 WLH
Examination: Written report (max. 20 pages) **Examination requirements:** Methods for in-depth familiarization in a scientific field of work, critical review of literature, scientific presentation, good scientific practice.	28 C

Course: Results of the Research Projects (Key competence) *Contents*: The specific skills practiced in the seminar include efficient and concise presentation of own scientific results in English, development of a differentiated scientific vocabulary, and the critical discussion of the scientific data in the broader context of their relevance for current research.	2 WLH
Examination: Oral presentation (approx. 20 min), not graded **Examination requirements:** Demonstration of adequate oral presentation skills including the critical discussion and evaluation of the data presented.	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 30	

Additional notes and regulations: Only for Matter to Life Students

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1108: Results of the Research Projects**	2 C 2 WLH

Learning outcome, core skills: The specific skills practiced in the seminar include efficient and concise presentation of own scientific results in English, development of a differentiated scientific vocabulary, and the critical discussion of the scientific data in the broader context of their relevance for current research.	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Results of the Research Projects (Key competence)	2 WLH
Examination: oral presentation (approx. 20 min.), not graded **Examination requirements:** Demonstration of adequate oral presentation skills including the critical discussion and evaluation of the data presented.	2 C

Admission requirements: M.MtL.1107	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 15	

Additional notes and regulations:
Only for Matter to Life students - distance learning

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1109: Ethics in Synthetic Biology – Internship**	3 C 2 WLH

Learning outcome, core skills: Upon successful completion of the module, students will have developed basic skills in researching relevant ethical issues in Synthetic Biology. They will be able to inform themselves about current discussions regarding ethical difficulties within the field and to present their findings and deliberations in an academic setting.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Ethics in Synthetic Biology – Internship (Internship) *Contents*: **Course: Ethics in Synthetic Biology (Internship)** a) Personal Research Project · Guided Literature Research · Development of Research Topic/Scientific Argument · Preparation of Oral Presentation b) Visit to the Ethics Group in Heidelberg with elements such as · Participation in an Ethics Seminar for Advanced Students · Participation in Events linked to the “Ethics at Heidelberg” Initiative Presentation/Discussion of Research as part of an Ethics colloquium	2 WLH
Examination: Essay; 15.000-25.000 characters [spaces included] (max. 15000) **Examination prerequisites:** Participation in the Internship phase including the Presentation of Personal Research Project at the Ethics colloquium **Examination requirements:** Structured and coherent presentation of the chosen ethically difficult issue in Synthetic Biology that shows awareness of current discussions and includes a personal assessment of normative questions pertaining this issue.	3 C

Admission requirements: Successful completion of Module M.MtL.1201. This module can be selected only on the recommendation of a lecturer.	**Recommended previous knowledge:** Basic ethical knowledge as provided in M.MtL.1201
Language: English	**Person responsible for module:** Thorsten Moos Nils Schütz
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2

Maximum number of students: 8	

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1110: Master Thesis**	30 C 25 WLH

Learning outcome, core skills:	**Workload:**
Students will be able to independently pursue a new (interdisciplinary) topic and perform the relevant literature search based on the knowledge they acquired during their studies. They will be able toapply current methods in chemistry and plan, set up, carry out, and document their experiments largely on their own. They can independently evaluate, put into writing, and critically discuss the results of their research.	Attendance time: 350 h Self-study time: 550 h

Course: Master Thesis *Course frequency:* each winter semester	

Examination: Written examination	30 C

Admission requirements:	**Recommended previous knowledge:** Successful completion of 84 credits at the time of Master thsis registration.
Language: English	**Person responsible for module:** Alle
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 4 - 6; Master: 1
Maximum number of students: 30	

Additional notes and regulations: Only for Matter to Life Students

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1201: Ethics in Synthetic Biology**	3 C 2 WLH

Learning outcome, core skills: Upon successful completion of the module, students will have a basic understanding of relevant ethical issues in Synthetic Biology. They will be able to explain and discuss ethical difficulties within the discipline as well as to interested laypersons and contribute to the social discourse on these topics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Ethics in Synthetic Biology (Key competence)	2 WLH
Examination: Written examination (120 minutes) **Examination requirements:** biosafety; dual-use research; cultural concepts of natural and artificial, living and non-living; economic aspects of synthetic biology, patentability; mechanisms of participation and societal decision-making related to synthetic biology	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Thorsten Moos Nils Schütz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 30	

Additional notes and regulations: Distance learning and in-person

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1202: Professional Skills in Science**	3 C 2 WLH

Learning outcome, core skills: **Learning Objectives** : By the end of the course, students will be able to: • Compose well-structured scientific texts that clearly present experimental and theoretical findings using appropriate academic conventions. • Deliver effective oral presentations of scientific content, demonstrating clarity, coherence, and audience awareness. • Apply principles of good scientific practice, including proper citation, data integrity, and responsible authorship. • Identify and implement ethical standards in scientific research, recognizing issues such as plagiarism, data manipulation, and conflicts of interest. • Demonstrate knowledge of laboratory safety protocols, including risk assessment, safe handling of materials, and emergency procedures. • Critically evaluate scientific literature, assessing the validity, reliability, and relevance of published research	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Professional skills in science (Key competence)	2 WLH
Examination: Oral presentation (approx. 30 min.), not graded **Examination requirements:** Demonstration of writing competence, oral presentation skills, lab safety rules and regulations in a scientific context in the English language at an advanced level.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp Köster, Sarah, Prof. Dr.
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1 - 2
Maximum number of students: 30	

Additional notes and regulations: Hybrid learning

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1203: Results of the Research Projects**	3 C 2 WLH

Learning outcome, core skills: The specific skills practiced in the seminar include efficient and concise presentation of own scientific results in English, development of a differentiated scientific vocabulary, and the critical discussion of the scientific data in the broader context of their relevance for current research.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Results of the Research Projects (Key competence)	2 WLH
Examination: oral presentation (approx. 20 min.), not graded **Examination requirements:** Demonstration of adequate oral presentation skills including the critical discussion and evaluation of the data presented.	2 C

Admission requirements: M.MtL.1101, M.MtL.1102	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1204: Preparation for Interdisciplinary Studies**	1 C

Learning outcome, core skills: Obtain a basic undertanding of a field (Physics/Chemistry/Mathematics/Biology) necessary for further study in Matter to Life. This should be in a field which is distinct from a student's undergraduate studies.	**Workload:** Attendance time: 0 h Self-study time: 30 h

Course: Preparation for Interdisciplinary Studies () *Contents*: Self paced virtual course via the Matter to Life Virtual Campus	
Examination: Written report (Schrilftlicher Bericht) demonstrating the knowledge accquired (Max 5 pages), not graded **Examination requirements:** Good grounding in the topic studied. Able to understand fundamental concepts and apply them to Matter to Life	1 C

Admission requirements: None	**Recommended previous knowledge:** None
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** Master: 1
Maximum number of students: 10	

Additional notes and regulations: Only for Matter to Life students

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1301: Methods and Topics from Matter to Life**	10 C 4 WLH

Learning outcome, core skills: Learning outcomes Students will extend their knowledge in the physics of complex systems and biophysics through the study of selected advanced topics. The emphasis is on connecting textbook-level knowledge with current research though a combination of introductory presentations by the lecturer(s), student presentations, self-study and scientific group discussions. Students will learn and practise applying the concepts from the introductory lectures on biophysics and physics of complex systems to specific problems in the physics of living systems and to critically assess current scientific literature. Core skills: Critical evaluation of the scientific literature, scientific discussion and debate, presentation and communication skills, application of previous knowledge in unfamiliar contexts.	**Workload:** Attendance time: 56 h Self-study time: 244 h

Course: Methods and Topics from Matter to Life (Lecture,Seminar)	4 WLH
Examination: Oral examination (approx. 45 minutes) **Examination prerequisites:** Presentation (approx. 20 min.) **Examination requirements:** In the final oral examination, the students demonstrate their broad knowledge of biophysics and the physics of complex systems. They should show that they recognize the interrelationships between these areas and that they can place specific scientific questions within the context of these relationships.	10 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp Prof. Dr. Eberhard Bodenschatz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 30	

Additional notes and regulations: Hybrid Learning - in-person in Göttingen with Live stream in Heidelberg

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1303: Methods and Topics from Matter to Life**	10 C 4 WLH

Learning outcome, core skills:	**Workload:**
The module is an introduction to synthetic chemistry. The aim is to introduce students to the fundamental concepts required to understand the chemistry necessary for futher study in matter to life and confidently engage with the research in Matter to Life which makes use of synthetic chemistry techniques. Learning Outcomes: Upon successful completion of the module, students will have a basic understanding of reaction mechanisms in classical synthetic chemistry. They are able to assess the possible reactivity of individual chemical groups and thus establish reaction mechanisms of chemical substances and have an idea of the experimental implementation of these reactions. They can understand reaction mechanisms and assess their relevance.	Attendance time: 56 h Self-study time: 244 h

Course: Methods and Topics from Matter to Life (Seminar) *Contents*: The course covers the methods and techniques learned so far as well as extends the spectrum and application areas of these. Therefore, different research will be discussed and analyzed and in depth strategies and synergies will be discussed and presented. Distance Learning	4 WLH
Examination: Oral examinationOral examination (approx 60 min) **Examination requirements:** • basic understanding of reaction mechanisms in classical synthetic chemistry • able to assess the possible reactivity of individual chemical groups • understand reaction mechanisms and assess their relevance	10 C

Admission requirements: none	**Recommended previous knowledge:** MtL Chemistry Preparation Course
Language: English	**Person responsible for module:** Prof. Dr. Stefan Klumpp
Course frequency: each summer semester1	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1
Maximum number of students: 30	

Additional notes and regulations:
Only for Matter to Life Students - Distance Learning

Georg-August-Universität Göttingen **Ruprecht-Karls-Universität Heidelberg** **Module M.MtL.1406: Research seminar Matter to Life**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research seminar Matter to Life (Seminar)	2 WLH
Examination: Oral Presentation (approx. 60 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Authorised examiners of the degree programme
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Additional notes and regulations: Only for Matter to Life Students - Format depending on topic

Georg-August-Universität Göttingen **Module M.OAW.MS.001: State of the Art: History of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese history. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: State of the Art: History of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (15 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15. min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.002: State of the Art: Philosophy of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese philosophy. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Philosophy of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10.000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca 15. min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.004: State of the Art: Politics of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese politics. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Politics of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min.).	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Carolin Kautz
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.005: State of the Art: Society of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese society. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Society of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca.15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.006: State of the Art: Law of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese law. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Law of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min).	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Carolin Kautz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.007: State of the Art: Economy of Modern China**	9 C 2 WLH

Learning outcome, core skills: The module covers the current state of the art regarding modern Chinese economy. The students are introduced to key questions of the discipline by reading recent research publications. They discuss and compare Western and Chinese state of the art, among others focusing on theoretical assumptions and their relevance to core questions of the discipline. They pay particular attention to the question whether and how scientific theories developed when studying Western phenomena can be transposed to Non-Western areas of research. Additionally, general theoretical texts relevant to the issue of the transposition of Western theories are given to the students in order to develop further questions and reflections on the concrete topics of the course. The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Economy of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific area of research, understand key questions and are aware of their methodological and theoretical implications and challenges. In class, they learned to critically analyze dominant theoretical assumptions and to debate how far these are appropriate to the Chinese case or have to be adapted. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.008: Case Studies: History of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese history. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: History of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.009: Case Studies: Philosophy of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese philosophy. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Philosophy of Modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15. min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.010: Case Studies: Religion of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese religion. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Religion of modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.011: Case Studies: Politics of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese politics. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Politics of modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15. min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Carolin Kautz
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.012: Case Studies: Society of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese society. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Society of modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15. min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.013: Case Studies: Law of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese law. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Law of modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Carolin Kautz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

12	

Georg-August-Universität Göttingen **Module M.OAW.MS.014: Case Studies: Economy of Modern China**	9 C 2 WLH

Learning outcome, core skills: The students enlarge on one specific topic of modern Chinese economy. By thoroughly reading and discussing Western and Chinese secondary literature students develop a research question and, on the basis of this, a research project (the students select adequate methods and theories; critically transpose scientific theories developed when studying Western phenomena to Non-Western areas of research; identify relevant materials and sources and make them accessible in publications and archives; set up a realistic work plan). The students enlarge on one specific topic by a) preparing a presentation and b) writing a term paper in both of which they also critically reflect on the writing process and the role of authorship in addition to the content-related aspects.	**Workload:** Attendance time: 28 h Self-study time: 242 h

Course: Economy of modern China (Seminar)	2 WLH
Examination: term paper (max. 10,000 words), graded and oral (10 min.) or written examination (20 min.), not graded **Examination prerequisites:** regular participation and presentation (ca. 15 min.)	9 C

Examination requirements: Students know the Chinese and Western state of the art on a specific and circumscribed topic of research and how to apply methodical and theoretical skills to an aspect of this topic and to use Chinese primary materials and sources in this. Knowledge of the theories or ideologies on which the texts are based and their historical embedding, which will be explored discursively in the seminar sessions in addition to simply reading the texts. They develop a research project organizationally, methodologically and theoretically, and have to read the compulsory readings. The oral or written examination includes in particular the critical reflection of the editing and writing process with regard to the role of one's own authorship and good scientific practice with reference to the selection and implementation of the theoretical and methodological approaches and the specific contents of the term paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.016a: Case Studies: Chinese Technical and Primary Source Materials: Social Sciences**	6 C 2 WLH

Learning outcome, core skills: The students are trained in reading Chinese primary texts relevant to research topics, e.g. documents related to the political, economic and societal processes. Selected Chinese primary texts are read, terminologically analyzed, historically contextualized and partially translated.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Exercise course (Exercise)	2 WLH
Examination: Term Paper (max. 5 pages) **Examination prerequisites:** regular participation, written translations of course readings (1 text per session, max. 3 pages A4)	6 C

Examination requirements: Students are able to understand and analyse the language, terminology and content of texts in the specialist language and translate these texts adequately into specislised English. This also includes the ability to research information on the people and events mentioned in the texts and to categorise them historically and politically., as well as the familiarity with the conceptual differences in Western and Chinese social science vocabulary and its discursive embedding, which are acquired in the comparative translation exercises in class.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.OAW.MS.016b: Case Studies: Chinese Technical and Primary Source Materials: Humanities**	6 C 2 WLH

Learning outcome, core skills: The students are trained in reading Chinese primary texts relevant to research topics, e.g. documents related to the historical, philosophical and religious processes and developments. Selected Chinese primary texts are read, terminologically analyzed, historically contextualized and partially translated.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Exercise course (Exercise)	2 WLH
Examination: Term Paper (max. 5 pages) **Examination prerequisites:** regular participation, written translations of course readings (1 text per session, max. 3 pages A4)	6 C

Examination requirements: Students are able to understand and analyse the language, terminology and content of texts in the specialist language and translate these texts adequately into specislised English. This also includes the ability to research information on the people and events mentioned in the texts and to categorise them historically and politically., as well as the familiarity with the conceptual differences in Western and Chinese social science vocabulary and its discursive embedding, which are acquired in the comparative translation exercises in class.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.OAW.MS.019: Colloquium**	12 C 2 WLH

Learning outcome, core skills: In this module students are trained in developing their own research projects particularly with regard to research approach, research question and methodological and theoretical concepts to be used for their project. They get the opportunity to present their research project underlying their MA thesis and can thereby profit from the respective discussions and comments, helping them with their further research. All students have to read relevant academic literature on the topics of the different presentations and research projects as well as on the relevant theoretical approaches.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Master colloquium (Seminar)	2 WLH
Examination: Oral Presentation (approx. 30 minutes), not graded **Examination prerequisites:** regular participation, written exposé (max. 5000 words) **Examination requirements:** Students have draft an exposé of the planned MA thesis together with their supervisor and present topic, research approach and progress of their research to their fellow students as well as respond to critical questions.	12 C

Examination requirements: Students have draft an exposé of the planned MA thesis together with their supervisor and present topic, research approach and progress of their research to their fellow students as well as respond to critical questions.	

Admission requirements: Successful completion of at least one of the following modules: M.OAW.MS.001 to M.OAW.MS.014 (see remark)	**Recommended previous knowledge:** None
Language: English, Chinesisch	**Person responsible for module:** Prof. Dr. Axel Schneider Prof. Dr. Dominic Sachsenmaier
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 24	

Additional notes and regulations: Students studying Modern Sinology totaling 78 C have to have completed at least two of the modules mentioned. Students studying Modern Sinology totaling 42 C have to have completed at least one of the modules mentioned.

Georg-August-Universität Göttingen **Module M.OAW.MS.021: Modern Chinese VII**	6 C 4 WLH

Learning outcome, core skills: After completing this module students are able to follow and comprehend talks and presentations in Chinese, understand discussions in their area of specialization and take part in discussions in standard Chinese on topics such as labour relations and current events . They can understand news broadcastings and current reporting (TV and radio) as well as films in standard Chinese. The language skills of the students are sufficient to discuss general topics and express their opinions They do not spend time searching for the right word, use complex sentence structures and show a good command of grammar. They no longer make mistakes that lead to misunderstandings.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: Speaking and Listening (Exercise)	4 WLH
Examination: Language proficiency test: written part (text editing, grammar, vocabulary and translation 120 min.) and oral part (speaking and listening; approx. 20 min.) **Examination prerequisites:** regular participation	6 C

Examination requirements: The students have to prove their language skills in listening, speaking, reading and writing in intercultural contexts of oral and written communication (receptive skills on level C1.1 of the Common European Framework of Reference for Languages).	

Admission requirements: M.OAW.MS.020	**Recommended previous knowledge:** none
Language: Chinesisch	**Person responsible for module:** Dr. Lingling Ni
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.OAW.MS.118: Modern Written Language II**	3 C 2 WLH

Learning outcome, core skills: In this module skills in modern Chinese written language are enlarged and consolidated. In particular, skills are trained in adequately giving an account of written Chinese and in written communication.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Modern written language II (Exercise)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular and active participation **Examination requirements:** Written exam on the comprehension of written texts.	3 C

Examination requirements: The students have to be able to understand sophisticated and demanding academic texts. They have to give an account in colloquial Chinese and to respond to them (in correspondence etc.)	

Admission requirements: M.OAW.MS.120	**Recommended previous knowledge:** none
Language: Chinesisch	**Person responsible for module:** Dr. Lingling Ni
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.OAW.MS.119: Premodern Written Chinese Language for Advanced Learners**	9 C 4 WLH

Learning outcome, core skills: A solid knowledge of pre-modern Chinese is not only an indispensable prerequisite for the academic study of written evidence of imperial China, but also for the study of a variety of modern Chinese texts and text types. The aim of this module is therefore to acquire knowledge of pre-modern written Chinese. It also lays the foundation for understanding written modern Chinese. .	**Workload:** Attendance time: 56 h Self-study time: 214 h

Course: Premodern Written Language for Advanced Learners I (Exercise)	2 WLH

Course: Premodern Written Language for Advanced Learners II (Exercise) *Course frequency:* each winter semester	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular participation on the both courses	

Examination requirements: Knowledge of the vocabulary and syntax of pre-modern Chinese written language. Understand its significance for the modern written language of Chinese.	

Admission requirements: B.MIS.011 or proof of equivalent academic achievements from previous studies or placement test at the East Asian Seminar.	**Recommended previous knowledge:** Chinese language at least at level B2.1, both verbally and in writing. Solid basic knowledge of classical Chinese.
Language: Chinesisch, English	**Person responsible for module:** Dr. Lingling Ni
Course frequency: each summer semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations: The teaching language in this module is Chinese as the module is aimed at advancing und improving language skills.

Georg-August-Universität Göttingen **Module M.OAW.MS.120: Modern Chinese VI**	9 C 8 WLH

Learning outcome, core skills: After completing this module, students can follow and understand Chinese-language lectures, including technical discussions in their field of specialization, and participate in discussions conducted in standard Chinese relating to issues such as work and current events. They can understand newscasts and current affairs programs (TV, radio), as well as feature films, provided they are in the standard language. Students have sufficient language skills to express themselves clearly on general topics and share their personal views. They need not spend too much time searching for the right word, use complex sentence structures and show a fairly good command of grammar. They no longer make mistakes that lead to misunderstandings.	**Workload:** Attendance time: 112 h Self-study time: 158 h

Course: Speaking and Listening (Exercise)	8 WLH
Examination: Language proficiency test: written part (text editing, grammar, vocabulary and translation 120 min.) and oral part (speaking and listening; approx. 20 min.) **Examination prerequisites:** regular participation	9 C

Examination requirements: The students have to prove their language skills in listening, speaking, reading and writing in intercultural contexts of oral and written communication (receptive skills on level B2.2 of the Common European Framework of Reference for Languages).	

Admission requirements: B.A. degree with a level of language skills equivalent to the level achieved in the B.A. “Moderne Sinologie” or “Chinesisch als Fremdsprache” of the University of Göttingen	**Recommended previous knowledge:** Chinese language skills (speaking and writing) at least at level B2.1
Language: Chinesisch	**Person responsible for module:** Dr. Lingling Ni
Course frequency: each winter semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 25	

Additional notes and regulations:

The teaching language in this module is Chinese as the module is aimed at advancing and improving language skills. Translations will be done from Chinese into English by students of the study program “MA Modern Sinology” and into German by students of the study program “Master of Education Chinesisch als Fremdsprache”.

Georg-August-Universität Göttingen **Module M.Phy-AM.001: Active Galactic Nuclei**	6 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Observational properties of active galaxies, taxonomy of AGN, continuum and emission line physics, structure and cinematics of the central region, supermassive black holes, unified models, environment, evolution of AGN. **Core skills:** After successful completion of the modul students should be able to describe and explain spectroscopy and physical properties of active galaxies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Lecture with exercises	
Examination: Oral Exam (ca. 30 Min.)	6 C

Examination requirements: Classification, spectral properties and physics of the central region in active galaxies surrounding the central supermassive black hole, properties of the hostgalaxies, large scale environment, evolution of AGN.	

Admission requirements: Previous AstroMundus courses (1.+2. Sem.)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Wolfram Kollatschny
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Phy-AM.002: Stellar structure and evolution**	6 C 2 WLH

Learning outcome, core skills: **Learning outcome:** The physics of stellar interiors and the evolution of stars belong to the fundamentals of astrophysics. The following topics will be studied in detail: Equations of stellar structure - Energy transport by diffusion of radiation, convection, and conduction - Equation of state, opacity and nuclear energy generation - Methods for the solution of the equations of stellar structure - Simple stellar models (polytropes) and their application - Stellar evolution: Pre - main sequence evolution, main sequence phase, post - main sequence evolution, final stages of stellar evolution.. **Core skills:** After successful completion of the modul students should be able to describe and explain the fundamentals of stellar structure and evolution, application of the concepts and results of the subject to other areas of astrophysics	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Lecture	
Examination: Oral Exam (ca. 30 Min.) **Examination prerequisites:** Solution of exercises	6 C

Examination requirements: Knowledge of the physics of stellar structure and evolution, the mechanics and thermodynamics of stellar structure, the methods for the solution of the equations of stellar structure, the various stages of stellar evolution and their interpretation.	

Admission requirements: Previous AstroMundus courses (1.+2. Sem.)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Wolfram Kollatschny
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Phy-AM.011: Computer simulation methods in statistical physics**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** The use of computers to solve problems in statistical physics is well established, and extremely useful in cases where exact solutions are not available. In this course, the Monte Carlosimulation method will be presented, whose applications are widespread, and include the field of biology. Starting with the basic Metropolis algorithm for the Ising model, this course will gradually move on to consider more complex systems, and show how the Monte Carlo method can be used to extract thermodynamic limit properties with relative ease. **Core skills:** Implement state-of-the-art MC simulations	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Lecture	2 WLH
Examination: Oral Exam (ca. 30 Min.)	3 C

Examination requirements: The aim of the course is to present the Monte Carlo simulation method,with the focus of application on many-body problems as encountered in statistical physics.	

Admission requirements: Previous AstroMundus courses (1.+2. Sem.)	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Wolfram Kollatschny
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy-AM.012: Astrophysical Properties: From planets to cosmology**	12 C 8 WLH

Learning outcome, core skills: After successful completion of the modul the students should have competence in different fields of observational as well as theoretical astrophysics. The topics of these lectures range from the nearby universe covering the Sun, Space Weather, helioseismology and planets up to more distant stars. Another subject is the physics and evolution of galaxies including their central supermassive Black Holes. Finally, aspects of the evolution of the universe (cosmology) will be addressed.	**Workload:** Attendance time: 112 h Self-study time: 248 h

Course: students choose 4 courses of the following contents *Contents*: - Cosmology, Early Universe, String theory - Galaxies, Supermassive Black Holes, Interstellar Medium - Stars, Planets - Solar Physics, (Helio)seismology, Space Weather - Observational Astrophysics - Numerical Experiments in Astrophysics	

Examination: Oral examination (approx. 60 minutes) **Examination requirements:** The basic physical principals that have been taught in the individual lectures have to be understood in the context of the astrophysical relevance. This includes competence in numerical methods for the lecture on numerical experiments in astrophysics.	12 C

Admission requirements: 1st year AstroMundus courses	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Wolfram Kollatschny
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.Phy-NF.7601: X-ray Tomography for Students of Medicine, Biology, Agriculture, Forestry**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Knowledge in: • basic principles of phase contrast radiography and tomography • radiation Safety / reconstruction Algorithms • practical tomographic workflow, instrument operation • quantitative assessment of image quality • image segmentation Taking the course students will be able to : • run own tomographic scans on pre-aligned instruments • reconstruct and inspect data based on Matlab toolbox (GUI version) • perform segmentation	Attendance time: 28 h Self-study time: 62 h

Course: Course: X-ray Tomography *Contents*: • one week self-study in preparation based on tutorials 3-4 day course with • morning introductory lectures • afternoon tomography training in the laboratory • training on established workflow • Matlab-based reconstruction (GUI-guided) • Data inspection and visualisation (Avizo)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** • knowledge about fundaments and workflow • successful example (tomography scan & reconstruction)	3 C

Admission requirements: none	**Recommended previous knowledge:** Electrodynamics, Matlab/Python
Language: English	**Person responsible for module:** Prof. Dr. Tim Salditt
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 10	

Additional notes and regulations:
1 week in October before start of lectures.

Partial overlap with Physicists' tomography course.

Georg-August-Universität Göttingen **Module M.Phy.1401: Advanced Lab Course I**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module, students have • familiarised themselves independently with complex issues, • performed experimental tasks under guidance in a team, • and have written scientific protocols within good scientific practice.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Advanced Lab Course I	
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** 4 successful performed experiments. **Examination requirements:** Advanced experimental methods for solving physical problems.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.1402: Advanced Lab Course II**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module, students have • familiarised themselves independently with complex issues, • performed experimental tasks under guidance in a team, • and have written scientific protocols within good scientific practice.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Advanced Lab Course II	
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** 4 successfull performed experiments **Examination requirements:** Advanced experimental methods for solving physical problems.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.1403: Internship**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module, students should familiarise oneself independently in complex issues and perform tasks under guidance in team work. The students should be able to present the obtained results in a talk or as a poster.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Internship	
Examination: Posterpresentation (approx. 30 min.) or written report (max. 15 pages) or talk (approx. 30 min.) **Examination prerequisites:** Internship **Examination requirements:** Advanced methods for solving physical problems in the area of the chosen focus.	6 C

Admission requirements: This module can be selected only on the recommendation of a lecturer.	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2

Georg-August-Universität Göttingen **Module M.Phy.1404: Methods of Computational Physics**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module students will be familiar with the key methods and algorithms of computational physics. Students will be able to select and deploy appropriate computational approaches in order to model and analyse a range of classical and quantum systems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Computational lab course	2 WLH

Course: Methods of Computational Physics (Lecture)	4 WLH
Examination: written (120 min.) or oral exam (approx. 30 min.) **Examination prerequisites:** Successful completion of 5 computational projects **Examination requirements:** Projects may include: Monte Carlo for phase transitions, rare event simulations, exact numerics for quantum systems, quantum Monte Carlo, simulations of disordered/glassy systems.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of equilibrium statistical mechanics and 1-particle quantum mechanics.
Language: English, German	**Person responsible for module:** Prof. Dr. Fabian Heidrich-Meisner
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 3
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.1405: Advanced Computational Physics**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module students should be familiar with the complete project cycle of advanced computational physics work. Students will be able to build and refine appropriate models for solutions of specific physical problems, select and implement advanced computational approaches using both existing software and own codes, and analyse the resulting data.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Computational lab course	
Examination: Oral examination (approx. 30 minutes) **Examination prerequisites:** Successful completion of 3 problem-driven computational projects (50% of the achievable score in each project) **Examination requirements:** Projects may include: Monte Carlo for phase transitions, rare event simulations, exact numerics for quantum systems, quantum Monte Carlo, simulations of disordered/glassy systems.	6 C

Admission requirements: none	**Recommended previous knowledge:** • *Methods of Computational Physics* • *Advanced Statistical Physics* • *Advanced Quantum Mechanics*
Language: English, German	**Person responsible for module:** Prof. Dr. Marcus Müller
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.409: Research Seminar Astro-/Geophysics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research Seminar Astro-/Geophysics	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.410: Research Seminar Biophysics/Physics of Complex Systems**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research Seminar Biophysics/Physics of Complex Systems	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination prerequisites:** active partizipation **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.411: Research Seminar Solid State/Materials Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research Seminar Solid State/Materials Physics	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination prerequisites:** active participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.412: Research Seminar Particle Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research Seminar Particle Physics	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination prerequisites:** active participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.413: General Seminar**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students should be able to develop the content of scientific publications (usually in English) independently and present it to a wide audience. They should be also able to evaluate it criticaly.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: General Seminar	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination prerequisites:** active participation **Examination requirements:** Use of presentation media, presentation of complex issues in front of expert and non-expert audiences, communication and discussion skills, critical awareness and expressiveness.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 150	

Additional notes and regulations:
We recomend to chose the seminar not of the own research focus.

Georg-August-Universität Göttingen **Module M.Phy.414: Research Lab Course in Theoretical Physics**	18 C

Learning outcome, core skills: **Learning Outcome:** By working independently within a current scientific research project students are fostered to familiarize themselves with a new advanced topic in the field of Theoretical Physics. They will learn to successfully perform a sub-task and finally present the reults to a professional audience. **Core skills:** Students will be able to organize, conduct, evaluate and present small, manageable projects in the field of Theoretical Physics, obeying the rules of good scientific practice.	**Workload:** Attendance time: 0 h Self-study time: 540 h

Course: Research Lab Course in Theoretical Physics	
Examination: Lecture(2 weeks preparation time) (approx. 30 minutes) **Examination requirements:** Methods for in-depth familiarisation in a scientific field of work, critical review of literature, scientific presentation, good scientific practice.	18 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Alle Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.415: Research Seminar Theoretical Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students are able to present complex lines of reasoning and evaluate own and others' presentations in critical discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Research Seminar Theoretical Physics	
Examination: Lecture(4 weeks preparation time) (approx. 60 minutes) **Examination prerequisites:** active participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussions.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Laura Covi
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5401: Advanced Statistical Physics**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the module students will be familiar with the core concepts and mathematical methods of statistical physics both in and out of equilibrium. Students will be able to model and analyse interacting or fluctuation-dominated systems using methods from statistical physics, and be aware of a range of application domains including soft matter, biophysics and network dynamics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Advanced Statistical Physics (Lecture)	4 WLH
Examination: written (120 min.) or oral exam (approx. 30 min.) **Examination prerequisites:** At least 50% of the homework of the excercises have to be solved successfully.	6 C

Course: Advanced Statistical Physics (Exercise)	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistical mechanics of equilibrium
Language: English	**Person responsible for module:** Prof. Dr. Matthias Krüger
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1
Maximum number of students: 80	

Georg-August-Universität Göttingen **Module M.Phy.5403: Seminar Classical-Quantum Connections in Theoretical Physics**	4 C 2 WLH

Learning outcome, core skills:	**Workload:**
After successful completion of the module students should be familiar with core concepts and mathematical methods that find use in the study of both classical and quantum systems. Students will be able to explore specific questions with the help of book chapters or journal publications and to present the topic in a seminar talk	Attendance time: 28 h Self-study time: 92 h

Course: Seminar Classical-Quantum Connections in Theoretical Physics	
Examination: Oral Presentation (approx. 45 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Topics will typically include: Classical & quantum path integrals, diagrammatics and perturbation theory, universality and phase transitions, effective field theories and coarse graining, quantum versus classical fluctuations theorems, quantum-classical mappings (d to d+1 dim.)	4 C

Admission requirements:	**Recommended previous knowledge:**
none	Advanced statistical mechanics and quantum mechanics equivalent to modules: • *Advanced Statistical Physics* • *Advanced Quantum Mechanics*
Language: English	**Person responsible for module:** Prof. Dr. Steffen Schumann
Course frequency: every 4th semester; summer term	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2 - 4
Maximum number of students: 28	

Georg-August-Universität Göttingen **Module M.Phy.5406: Current topics in theoretical physics**	4 C 4 WLH

Learning outcome, core skills: After successful completion of the module students will be familiar with a range of advanced concepts and methods from modern theoretical physics. Students will be able to deploy advanced methods to analyse systems and models that are of interest to current theoretical physics research, covering topics from classical to quantum and from equilibrium to non-equilibrium systems.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Current topics in theoretical physics (Lecture)	
Examination: oral exam (approx. 30 Min.) or written report (max. 15 p.) **Examination prerequisites:** none **Examination requirements:** At least 2 topics from 4-6 lecture blocks (to be announced at the start of the lectures) will be assessed. Topics will be taken from soft condensed matter, theor. biophysics, statistical mech., cond. matter theory, quantum many-body physics, quantum field theory, particle physics, theor. astrophysics, complex systems modelling.	4 C

Admission requirements: none	**Recommended previous knowledge:** • *Advanced Statistical Physics* • *Advanced Quantum Mechanics*
Language: English	**Person responsible for module:** Prof. Laura Covi
Course frequency: every 4th semester; summer term	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.Phy.541: Advanced Topics in Classical Theoretical Physics I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of Classical Theoretical Physics to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of Classical Theoretical Physics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: A Course (6 C) in the field of Classical Theoretical Physics *Course frequency:* each semester	
Examination: Written examination (120 Min.) or oral examination approx. 30 Min.) or talk (approx. 30 Min.),2 weeks preparation time **Examination requirements:** Advanced techniques and models in Classical Theoretical Physics	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Peter Kurt Sollich
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.542: Advanced Topics in Classical Theoretical Physics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students will be familiar with advanced concepts of Classical Theoretical Physics	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: A Course (3 C) in the field of Classical Theoretical Physics *Course frequency:* each semester	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced techniques and models in Classical Theoretical Physics	3 C

Course: A Course (3 C) in the field of Classical Theoretical Physics *Course frequency:* each semester	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced techniques and models in Classical Theoretical Physics	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Peter Kurt Sollich
Course frequency: every 4th semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.543: Advanced Topics in Theoretical Quantum Physics I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of Theoretical Quantum Physics to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of Theoretical Quantum Physics .	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: A Course (6 C) in the field of Theoretical Quantum Physics *Course frequency:* each semester	
Examination: Written examination (120 Min.) or oral examination approx. 30 Min.) or talk (approx. 30 Min.),2 weeks preparation time **Examination requirements:** Advanced Advanced techniques and models in Theoretical Quantum Physics	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Stefan Kehrein
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.544: Advanced Topics in Theoretical Quantum Physics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students will be familiar with advanced concepts of Theoretical Quantum Physics	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: A Course (3 C) in the field of Theoretical Quantum Physics *Course frequency:* each semester	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced techniques and models in Theoretical Quantum Physics	3 C

Course: A Course (3 C) in the field of Theoretical Quantum Physics *Course frequency:* each semester	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced techniques and models in Theoretical Quantum Physics	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Steffen Schumann
Course frequency: every 4th semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.546: Seminar Advanced Topics in Theoretical Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of this module, students will be able to reproduce and present complex chains of arguments, assess their own and other students' presentation critically.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar Advanced Topics in Theoretical Physics	
Examination: Lecture4 weeks preparation time (approx. 60 minutes) **Examination prerequisites:** Active participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussion.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.551: Advanced Topics in Astro-/Geophysics I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of astro- and geophysics to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of astro-/ geophysics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Course (6 C) in the field of Astro- or Geophysics	
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in astro- or geophysics	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.552: Advanced Topics in Astro-/Geophysics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with advanced concepts of astrophysics and Geophysics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Topics in Astro-/Geophysics IIa	2 WLH
Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) or talk (approx. 30 Min.), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in astro- or geophysics	3 C

Course: Advanced Topics in Astro-/Geophysics IIb	2 WLH

Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) or talk (approx. 30 Min.), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in astro- or geophysics	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.556: Seminar Advanced Topics in Astro-/Geophysics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with the presentation of complext problems, scientific discussion as well as evaluation of contents of the presentations.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar Advanced Topics in Astro-/Geophysics I	
Examination: Lecture4 weeks preparation time (approx. 60 minutes) **Examination prerequisites:** active Participation **Examination requirements:** Advanced experimental techniques or theoretical models in astro- or geophysics	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Stefan Dreizler
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5601: Seminar Computational Neuroscience/Neuro-informatics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the module, students ... • have deepened their knowledge of computational neuroscience / neuroinformatics by an independent elaboration of a topic; • have learned methods of presentation of topics from computer science; • are able to deal with (English-language) literature; • are able to present an informatic topic; • are able to lead a scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar (Seminar) *Course frequency:* each semester	
Examination: Presentation (approx. 45 Min.) with written report (max. 7 S.) **Examination prerequisites:** regular participation **Examination requirements:** Independent preparation and presentation of research-related topics from the area of computational neuroscience / neuroinformatics as well as biophysics of neuronal systems.	4 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.5614
Language: English	**Person responsible for module:** Prof. Dr. Florentin Andreas Wörgötter
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1 - 3
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module M.Phy.5604: Biomedicine imaging physics and medical physics**	6 C 4 WLH

Learning outcome, core skills: After taking this course, students will have quantitative insight into the physical, mathematical and algorithmic foundations of imaging techniques for biomedical applications, in particular CT, MRI, tomographic reconstruction, image processing, nuclear techniques, ultrasound and laser-tissue interaction up to emerging techniques such as phase contrast radiography. Further, the course leads a basic understanding of medical physics in a broader sense, including radiotherapy, radiobiology.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung (Lecture)	
Examination: Written examination (120 Min.) or oral examination (approx. 30 Min.) or Presentation (approx. 30 Min., 2 weeks preparation time) **Examination requirements:** Knowledge of physical principles in medical diagnostics and therapy, in particular modern imaging techniques: Radiography (Absorptions- and Phase contrast), tomography, magnetic resonance imaging () positron-emissions-tomography, single photon emission tomography (SPECT), nuclear methods and probes, ultrasound imaging, optical microscopy. Along with the experimental principles, the algorithmic and mathematical concepts of image reconstruction and processing have to be mastered.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Tim Salditt
Course frequency: every 4th semester; alle 2 Jahre	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 2 - 4
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.Phy.5605: Nanooptics and Plasmonics**	6 C 4 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden über fundierte Kenntnisse auf dem sich rasant entwickelnden Gebiet der Nanooptik und Plasmonics verfügen, sowohl in theoretischer als auch in experimenteller Hinsicht.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Vorlesung mit Selbststudium Literatur (Lecture)	

Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Theorie der Wechselwirkung von Licht und Materie auf der Nanometerskala; Grundlagen der optischen Mikroskopie und Spektroskopie, welche in der Nanooptik angewendet werden; Physik einzelner optischer Quantenemitter; Physik optischer Fallen; Physik optischer Emitter in Nanoresonatoren; Physik optischer Metamaterialien.	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: English	**Person responsible for module:** Prof. Dr. Jörg Enderlein
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4
Maximum number of students: 20	

Additional notes and regulations: Schwerpunkt: BK, FM

Georg-August-Universität Göttingen **Module M.Phy.5608: Liquid State Physics**	4 C 2 WLH

Learning outcome, core skills: Lernziele/Kompetenzen: Students should learn the core concepts of the theories and experimental phenomenology of the liquid state, from simple to macromolecular/polymeric to granular liquids. Through readings of the important papers, both seminal or at the fore-front of research, they should learn how to understand the modern open questions regarding the liquid state. Students should also explore a specific topic that is currently subject of active research, and prepare an oral presentation and a written handout at the end of the semester.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Liquid State Physics *Contents*: This course will cover the foundations of the theoretical and experimental description of simple liquids, macromolecular/polymeric liquids and granular liquids and gases. We will learn about the statistico-mechanical approach to the liquid state, including distribution function theories, Boltzmann equation and Navier-Stokes equation. We will then move on to the dynamics of macromolecular liquids such as polymers. Based on concepts like viscosity and visco-elasticity, we will also explore thin film flows and non-Newtonian phenomena. The final part of the course will consider liquids composed of “macroscopic molecules” like sand grains. While their flow behavior is often reminiscent of molecular liquids, the dissipative nature of their interaction makes them an intrinsic out of equilibrium phenomenon.	
Examination: Presentation (ca. 40 min.) and handout on special topic of choice **Examination prerequisites:** Participation in course discussion and assignments **Examination requirements:** Students will perform an in-depth investigation on a particular course topic, and present this in a symposium at the end of the course.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik; Ansprechpartner Dr. Marco Mazza
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4

Maximum number of students: 50	

Additional notes and regulations:

SP: Biophysik/nichtlineare Dynamik; Festkörperphysik; Materialphysik; Astrophysik; Geophysik

Georg-August-Universität Göttingen **Module M.Phy.561: Advanced Topics in Biophysics/Physics of complex systems I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of Biophysics/Physics of complex systems to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of Biophysics/ Physics of complex systems.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Course (6 C) in the field of Biophysics and Physics of Complex Systems	
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Biophysics and Physics of Complex Systems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5611: Cell biophysics across scales**	6 C 4 WLH

Learning outcome, core skills: **Learning outcome:** The aim of this course is for students to gain a profound knowledge or how the different length scales in biophysics are related, including the following fields: basics in biology and chemistry (cellular components, physical chemistry, molecular biology); Basics in soft matter physics (Random walks, Brownian motion, diffusion; polymer physics); Methods (microscopy, scattering, optical tweezers, atomic force microscopy, microfluidics); Biophysics across scales (molecular scale: structural biology; mesoscopic scale: filaments, membranes and active matter; cellular scale, tissue and organ scale). **Core skills:** After successfully completing this course, students will be able to extract relevant information from scientific publications, plan biophysical experiments, analyze, plot and interpret model data sets, understand, solve and interpret physical models of biological systems, and discuss state-of-the-art biophysics research results.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Cell biophysics across scales (Lecture)	3 WLH
Examination: Oral exam (approx. 30 min.) or written exam (60 min.) **Examination requirements:** Proficiency in: Basics in biology and chemistry; Basics in soft matter physics; Methods; Biophysics across scales.	6 C

Course: Biophysics across scales: hands-on-tutorial	1 WLH

Admission requirements: none	**Recommended previous knowledge:** B.Sc. in physics or a related field, course B.Phy.1571: Introduction to Biophysics or an equivalent course
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.5612: Microfluidics**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** Students will learn the theoretical foundations of fluid dynamics, hydrodynamics on the microscale, wetting and capillarity, and the physics low Reynolds numbers. Students will also learn the how these topics are studied and applied in experiments, learn about device fabrication using soft lithography and the use of microfluidics in biology and biophysics including “lab-on-a-chip” applications. **Core skills:** After successfully completing this course, students will be familiar with basic hydrodynamics and their applications at scales applicable to biology, biophysics, material sciences and biotechnology.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Microfluidics (Lecture)	2 WLH
Examination: Oral exam (approx. 30 min.) or written exam (60 min.) **Examination requirements:** Students should know the fundamentals of fluid dynamics on small scales and be able to apply them independently to specific questions.	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Sc. in physics or a related field, course B.Phy.1571: Introduction to Biophysics or an equivalent course
Language: English	**Person responsible for module:** Prof. Dr. Sarah Köster
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.5613: Lecture: Principles and Applications of Synchrotron and Free Electron Laser Radiation**	3 C 4 WLH

Learning outcome, core skills: Lernziele: Ziel der Lehrveranstaltung ist die enge Verknüpfung der Lehre auf dem Gebiet der Röntgenphysik mit der Arbeit an Großforschungseinrichtungen, insbesondere der Forschung im Bereich Photon Science bei DESY. In der Vorlesung erhalten die Studierenden eine Einführung in die Forschung mit Synchrotronstrahlung und Strahlung von Freien Elektronen Lasern: Erzeugung der Strahlung und Charakteristika der Quellen, Grundlagen der Beschleunigerphysik, Experimentieraufbauten (Strahlrohre), Grundlagen der Röntgenbeugung und der Röntgenspektroskopie, Röntgenkurzzeitphysik. Im Blockkursus erlernen sie die Anwendung röntgenphysikalischer Methoden (mit jährlich wechselnden Schwerpunkten): kohärente Abbildung, mathematische Beschreibung, Anwendungen in der Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc. (jeweils als Einführung). Kompetenzen: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden... • über fundamentales Wissen über die Prinzipien der Erzeugung von Synchrotronstrahlung und der Strahlung von Freien Elektronenlasern deren Anwendungen verfügen; • Fähigkeiten in der mathematischen Beschreibung von Röntgenbeugung an ausgewählten, aktuellen Beispielen aus der Biophysik, Molekülphysik, Kristallographie etc. entwickelt haben.	**Workload:** Attendance time: 88 h Self-study time: 2 h

Course: Vorlesung (Lecture) *Contents*: Einführung in die Forschung mit Synchrotronstrahlung und Strahlung von Freien Elektronen Lasern: Erzeugung der Strahlung und Charakteristika der Quellen, Grundlagen der Beschleunigerphysik, Experimentieraufbauten (Strahlrohre), Grundlagen der Röntgenbeugung und der Röntgen-spektroskopie, Röntgenkurzzeitphysik.	WLH
Course: Blockkurs Desy Campus, Hamburg (2,5 Tage) *Contents*: Einführung in die Anwendungen röntgenphysikalischer Methoden (mit jährlich wechselnden Schwerpunkten) unter Anwendung hochenergetischer Strahlung: Einführung in die kohärente Abbildung, mathematische Beschreibung der Röntgenbildgebung, Anwendungen in der Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc.	
Examination: Oral examination (approx. 45 minutes) **Examination prerequisites:** Aktive Teilnahme **Examination requirements:**	3 C

Verständnis über die physikalischen Grundlagen der Forschung mit Synchrotronstrahlung und mit Strahlung von Freien Elektronen Lasern: Erzeugung der Strahlung und Charakteristika der Quellen, Grundlagen der Beschleunigerphysik, Experimentieraufbauten (Strahlrohre), Grundlagen der Röntgenbeugung, der Röntgenbildgebung und der Röntgenspektroskopie; Grundlagen der Röntgenkurzzeitphysik, Anwendung röntgenphysikalischer Methoden (mit jährlich wechselnden Schwerpunkten): kohärente Abbildung, mathematische Beschreibung, Anwendungen in der Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc. (jeweils Einführung).	

Admission requirements: keine	**Recommended previous knowledge:** Einführung in die Röntgenphysik
Language: English	**Person responsible for module:** Prof. Dr. Simone Agnes Techert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4
Maximum number of students: 30	

Additional notes and regulations:
Einbringbar in folgende Schwerpunkte:
Biophysik/komplexe Systeme, Festkörper/Materialphysik

Georg-August-Universität Göttingen **Module M.Phy.5614: Lab Course: Principles and Applications of Synchrotron and Free Electron Laser Radiation**	3 C 2 WLH

Learning outcome, core skills: Lernziele: Ziel des Praktikums ist die enge Verknüpfung der praktisch orientierten Röntgenphysik-Hochschulausbildung mit der wissenschaftsorientierten, experimentellen Arbeit an Großforschungseinrichtungen, insbesondere der Forschung im Bereich Photon Science bei DESY. Im Blockpraktikum sollen die Studierenden ein praktisches Verständnis für komplexe Röntgenexperimente an Hochenergiestrahlungsquellen entwickeln, insbesondere an den (exemplarisch aufgelisteten) Strahlrohren P04, P08, P11, P24 des Speicherrings Petra III und der Strahlrohre PES und CAMP des Freien Elektronenlasers FLASH und FLASH II. Kompetenzen: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden... • experimentelle Fähigkeiten und Basiswissen in Röntgenexperimenten entwickelt haben an ausgewählten, wissenschaftlich aktuellen Beispielen aus der Biophysik, Molekülphysik, Kristallographie etc., • grundlegende experimentelle Expertise in Röntgenexperimenten an Hochenergiestrahlungsquellen erworben haben, u.a. auf dem Gebieten der Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc.	**Workload:** Attendance time: 88 h Self-study time: 2 h

Course: Einwöchiges Blockpraktikum am Desy *Contents*: Inhalte: Erlangung von experimentellen Fähigkeiten und Expertise von komplexen Röntgenexperimenten mit Hochenergiestrahlungsquellen; tieferes Verständnis von Röntgensynchrotron-Strahlungs-Experimente exemplarisch an Experimenten der Strahlrohre P04, P08, P11 oder P24 des Speicherrings Petra III und der Strahlrohre PES und CAMP des Freien Elektronenlasers FLASH oder FLASH II (wechselnde Schwerpunkte); Einführung in die Praxis röntgenphysikalischer: kohärente Abbildung, mathematische Beschreibung, Anwendungen in der Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc.	2 WLH
Examination: Oral examination (approx. 45 minutes) **Examination prerequisites:** Aktive Teilnahme **Examination requirements:** Vorliegendes Protokoll zum Blockpraktikum mit eigenständig erarbeitetem Auswerteinhalt (Einführungsniveau). Grundlegende Kenntnisse zu Experimenten mit Synchrotronstrahlung und Strahlung von Freien Elektronen Lasern. Exemplarisch: Grundlegendes Verständnis an aktueller Beispiele von Röntgenexperimenten aus den Gebieten der Biophysik, Molekülphysik, Biophysik, Molekülphysik, Kristallographie, Kurzzeitphysik, etc. (je nach Praktikumort an	3 C

P04, P08, P11 oder P24 des Speicherrings Petra III und der Strahlrohre PES und CAMP des Freien Elektronenlasers FLASH oder FLASH II). Nachweis experimenteller Fähigkeiten, Nachweis von mathematische Expertise (weitreichendere Grundlagen) zur Auswertung von Röntgenexperimenten, Reflektion der durchgeführten Experimente.	

Admission requirements: none	**Recommended previous knowledge:** Einführung in die Röntgenphysik
Language: English	**Person responsible for module:** Prof. Dr. Simone Agnes Techert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4
Maximum number of students: 10	

Additional notes and regulations:
Einbringbar in folgende Schwerpunkte:
Biophysik/komplexe Systeme, Festkörper/Materialphysik

Georg-August-Universität Göttingen **Module M.Phy.5615: Differential Forms For Physicists**	3 C 2 WLH

Learning outcome, core skills: **Learning Objectives** : Definition of differential forms, Folding, Wedge product, Metric, Hodge star dual, Gradient, divergence, and curl, Integration of differential forms, Stokes theorem, Lie derivative, Electromagnetism with differential forms, Faraday 2-form, Connection forms, Christoffel symbols, Covariant derivatives, Riemann curvature 2-form, Fermi-Walker transport, Thomas precession, Hydrodynamics in curved spacetime, Ricci tensor, Ricci scalar, Einstein tensor, Einstein's equations, Basic solutions (Schwarzschild, Kruskal-Szekeres, Boyer-Lindquist, Kerr-Newman), Geodesics (perihel precession, light deflection, gravitational redshift, radio signal delay), Friedmann-Lemaître cosmology, Differential geometry in optics (optical cloaking), Differential geometry of lines (Frenet-Serret theory, polymer biophysics) and surfaces (Gaussian curvature, membrane biophysics), Differential geometry of gauge fields, Aharonov-Bohm effect, Berry-Pacharatnam geometric phase. **Competencies** : The students shall acquire fundamental knowledge about modern differential geometry in the language of differential forms, with applications in electrodynamics, hydrodynamics, optics, biophysics, and relativistic physics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Differential Forms For Physicists	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Derivation and explanation of fundamental relations of differential geometry, Derivation of various physical applications (electrodynamics, hydrodynamics, optics, biophysics, general relativity).	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Sc. Physik
Language: English	**Person responsible for module:** Prof. Dr. Jörg Enderlein
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Phy.562: Advanced Topics in Biophysics/Physics of complex systems II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with advanced concepts of Biophysics and Physics of Complex Systems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Course (3 C) in the Field of Biophysics/Physics of complex systems	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Biophysics and Physics of Complex Systems	3 C

Course: Course (3 C) in the Field of Biophysics/Physics of complex systems	2 WLH

Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Biophysics and Physics of Complex Systems	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.566: Seminar Advanced Topics in Biophysics/ Complex Systems**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with the presentation of complext problems, scientific discussion as well as evaluation of contents of the presentations.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar Advanced Topics in Biophysics/Complex Systems	
Examination: Lecture4 weeks preparation time (approx. 60 minutes) **Examination prerequisites:** active Participation **Examination requirements:** Advanced experimental techniques or theoretical models in astro- or geophysics	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5701: Advanced Solid State Theory**	6 C 6 WLH

Learning outcome, core skills: After successful completion of the modul students should be able to perform calculations using many-body techniques, describe and model simple experimental observations, understand and use the language of modern solid-state theory.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Lecture	4 WLH
Examination: written exam (90 min.) or oral exam (approx. 30 min.) **Examination requirements:** Quantum-field theoretical description of solids, elements of ab initio methods, symmetries and binding, optical properties of solids, correlated electron systems, elements of transport theory. Formulation of theories based on experimental observation, description and interpretation of experiments in solids, knowledge of manybody techniques	6 C

Course: Exercises	2 WLH

Admission requirements: none	**Recommended previous knowledge:** Introduction to Solid State Physics Quantum mechanics I
Language: English	**Person responsible for module:** Dean of Studies, Faculty of Physics
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 2 - 3
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5705: Materials Physics I: Microstructure-Property-Relations**	4 C 3 WLH

Learning outcome, core skills: AAfter successful completion of this Module, the student will have obtained an overview about the realistic structure of materials (realistic = including defects and irregularities). Inaddition, a deepened understanding of the relation between micro-structure andfundamental material properties will have been gained via the discussion of theoreticalmodels and experimental results.	**Workload:** Attendance time: 42 h Self-study time: 78 h

Course: Materials Physics I: Microstructure-Property-Relations *Contents*: Basic concepts of structure-property relations and defects, topology,thermodynamics and properties of defects, microstructure and mechanical properties.	
Examination: Presentation (approximately 30 minutes) or written examination (120 minutes) or oral examination (approximately 30 minutes) **Examination prerequisites:** At least 50% of the homework problems need to be solved correctly. **Examination requirements:** Global and local symmetries in materials, elastic continuum theory, structure of pointdefects, dislocations and grain boundaries, thermodynamics of defects, mechanical /chemical / electronic / transport properties of defects, as well as methods for the investigation of micro-structure and related properties.	4 C

Admission requirements: none	**Recommended previous knowledge:** Introductory courses in materials science and solid state physics.
Language: English	**Person responsible for module:** Prof.in Cynthia Ann Volkert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.5706: Materials Physics II: Kinetics and Phase Transformations**	4 C 3 WLH

Learning outcome, core skills:	**Workload:**
After successful completion of this Module, the student will have obtained an overview of theoretical concepts and mechanisms of phase transformations in materials. In addition, a deeper understanding of the description of kinetic processes in the framework of irreversible thermodynamics will have been gained.	Attendance time: 42 h Self-study time: 78 h

Course: Materials Physics II: Kinetics and Phase Transformations *Contents*: Fundamentals and specific examples of the behavior of condensed mattersystems in non-equilibrium situations.	
Examination: Presentation (approximately 30 minutes) or written exam (120 minutes) or oral examination (approximately 30 minutes) **Examination prerequisites:** At least 50% of the homework problems need to be solved correctly. **Examination requirements:** Non-equilibrium thermodynamics, generalized driving forces, diffusion, nucleation, motion and instabilities of interfaces, solidification, precipitation, domain growth, spinodal decomposition, order-disorder phase transitions, kinetically controlled transformations.	4 C

Admission requirements: none	**Recommended previous knowledge:** Introductory courses in materials science and solid state physics, as well as the course Materials Physics I.
Language: English	**Person responsible for module:** Prof.in Cynthia Ann Volkert
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 2 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.5707: Materials research with electrons**	3 C 2 WLH

Learning outcome, core skills: Fundamentals of the application of electron microscopy to the characterization and analysis of materials, with emphasis on: • Interactions between electrons and solids • Preparation of samples, limits of electron microscopy • Fundamentals and advanced concepts of electron microscopy • Diffraction and imaging • Analytical applications (EDX, EELS, GPA, …) • Overview of current research topics After successful completion of this Module, the student will be able to understand further developments of electron microscopy and gain access to current research themes.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Materials research with electrons (Lecture)	
Examination: Oral examination(approximately 30 minutes) **Examination requirements:** Understanding of fundamental concepts, facts, and methods. Basic understanding of diffraction, imaging, and analysis.	3 C

Admission requirements: none	**Recommended previous knowledge:** Introductory courses in materials science and solid state physics.
Language: English	**Person responsible for module:** apl. Prof. Dr. Michael Seibt
Course frequency: Every 2 years, summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.5709: Physics of Semiconductor Nanostructures**	3 C 2 WLH

Learning outcome, core skills: Electronic and optical properties of homogeneous semiconductors, pn-junction, semiconductor heterostructures, quantum confinement, mesoscopic transport. After successful completion of this module the students will be able to understand basic and advanced concepts of the physics of semiconductor.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Physics of Semiconductors (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Basic and advanced concepts of the physics of semiconductor nanostructures.	3 C

Admission requirements: none	**Recommended previous knowledge:** Einführung in die Festkörperphysik, Solid State Physics II
Language: English	**Person responsible for module:** Dr. Jörg Malindretos
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 3
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.571: Advanced Topics in Solid State/Materials Physics I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of Solid State/Materials Physics to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of Solid State/ Materials Physics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: A course (6 C) in the field of Solid State/Materials Physics	
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Solid State/Materials Physics	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5711: Surface Physics**	3 C 2 WLH

Learning outcome, core skills: **Learning outcome:** After having successfully completed the module students should understand the fundamental concepts of the rapidly evolving field of surface physics. They should be able to transfer this knowledge to other areas like the physics of nanostructures and interfaces. More specifically, the students will have basic knowledge in the following topics: 1. Geometry of surfaces (e.g. relaxation, reconstruction, Wood's notation) 2. Electronic states of surfaces (e.g. surface states, projected band structure) 3. Processes at surfaces (e.g. adsorption, growth, diffusion) 4. Preparation and analysis of surfaces (e.g. UHV techniques, STM, LEED, PES) 5. Surface Excitations (e.g. surface phonons, surface plasmons) 6. Interfaces, Nanostructures **Core skills:** The students will have a fundamental understanding of the general structural and electronic properties of solid state surfaces. They will have a basic knowledge of current surface preparation and surface analysis methods.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Surface Physics (Lecture)	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Basic knowledge and understanding of surface physics, i.e. atomic and electronic structure of solid surfaces including concepts like e.g. reconstruction, surface states, surface phonons, adsorption, experimental methods.	3 C

Admission requirements: none	**Recommended previous knowledge:** B.Phy.1521: Introduction to Solid State Physics
Language: English, German	**Person responsible for module:** Prof. Dr. Martin Wenderoth
Course frequency: every 4th semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.Phy.572: Advanced Topics in Solid State/Materials Physics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with advanced concepts of Solid State/Materials Physics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Course (3 C) in the field of Solid State/Materials Physics	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Solid State/Materials Physics	3 C

Course: Course (3 C) in the field of Solid State/Materials Physics	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Solid State/Materials Physics	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.576: Seminar Advanced Topics in Solid State/ Materials Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with the presentation of complext problems, scientific discussion as well as evaluation of contents of the presentations.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar Advanced Topics in Solid State/Materials Physics	
Examination: Lecture4 weeks preparation time (approx. 60 minutes) **Examination prerequisites:** active participation **Examination requirements:** Advanced experimental techniques or theoretical models in Solid State/Materials Physics	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.5801: Detectors for particle physics and imaging**	3 C 3 WLH

Learning outcome, core skills: After successful completion of this module, students should bfamiliar with modern methods and questions about detector physics in high energy physics, imaging and related fields.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Detectors for particle physics and imaging	
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Based on the introductory lecture "interactions between radiation and matter" this lecture covers special topics of detector physics such as the layout of certain detector types (i.e. semiconductor detectors, ionisation detectors etc.), readout systems and noise contribution, radiation damage of detector material and readout as well as the application of such detectors.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: every 4th semester; irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Phy.5803: Symmetries in Quantum Field Theory**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreichem Absolvieren des Moduls sollten die Studierenden zwischen unterschiedlichen Symmetrie-Konzepten differenzieren können sowie die angemessenen mathematischen Begriffsbildungen und übergreifenden Methoden kennen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Vorlesung (Blockveranstaltung, eine Semesterhälfte) (Lecture)	

Examination: Hausarbeit (maximal 15 S.) oder mündliche Prüfung (ca. 30 min.) **Examination requirements:** Klassische Symmetrien, Gruppen und Darstellungen. Symmetrien in der Quantentheorie, Automorphismen und Derivationen, unitäre Operatoren und Generatoren, Implementierbarkeit und spontane Symmetriebrechung. Anwendungen in der Quantenfeldtheorie.	3 C

Admission requirements: none	**Recommended previous knowledge:** Quantenmechanik I; Feldtheorie der Quantentheorie
Language: English	**Person responsible for module:** StudiendekanIn der Fakultät für Physik
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 3
Maximum number of students: 20	

Additional notes and regulations: Schwerpunkt: KT, FM

Georg-August-Universität Göttingen **Module M.Phy.5805: Quantum Field Theory II**	3 C 3 WLH

Learning outcome, core skills:	**Workload:**
Lernziele : Ziel der Veranstaltung ist es, dass Verständnis der theoretischen Konzepte von Quantenfeldtheorien zu vertiefen und erweitern. Alternativ zur kanonischen Feldquantisierung wird die Methode der Pfadintegralquantisierung vorgestellt. Ein zweiter Schwerpunkt liegt auf der Renormierung der Theorien. Als praktische Beispiele dienen teilchenphysikalische Modelle und dabei insbesondere nicht-abelsche Eichfeldtheorien. **Kompetenzen** : Die Studierenden sollen mit den Methoden der Quantenfeldtheorie vertraut werden. Ein vertieftes Verständnis der Quantisierungs- und Renormierungsprozeduren wird vermittelt. Die Studierenden werde damit in die Lage versetzt, Fragestellungen der aktuellen Forschung zu verstehen.	Attendance time: 42 h Self-study time: 48 h

Course: Quantum Field Theory II	2 WLH
Examination: Klausur (90 Min.) oder mündliche Prüfung (ca. 30 Min.)	3 C

Course: Quantum Field Theory	1 WLH

Admission requirements: none	**Recommended previous knowledge:** QM II, QFT
Language: English	**Person responsible for module:** Prof. Dr. Andreas Tilgner
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 1
Maximum number of students: 30	

Additional notes and regulations: SP KT

Georg-August-Universität Göttingen **Module M.Phy.5806: Detectors for particle physics and imaging**	3 C 3 WLH

Learning outcome, core skills:	**Workload:**
Lernziele : Aufbauend auf der Einführungsveranstaltung „Wechselwirkung zwischen Strahlung und Materie“ sollen speziellere Themen der Detektorphysik wie der Aufbau bestimmter Detektortypen (z.B. Halbleiterdetektoren oder andere Ionisationsdetektoren), Auslesesysteme und Rauschbeiträge in der Auslese, Strahlenschäden am Detektormaterial/der Auslese, etc. und die Anwendung solcher Detektoren betrachtet werden. **Kompetenzen** : Die Studierenden sollen mit aktuellen Fragestellungen der Detektorphysik in der Hochenergiephysik, der Bildgebung und ähnlichen Anwendungsgebieten vertraut gemacht werden.	Attendance time: 42 h Self-study time: 48 h

Course: Detectors for particle physics and imaging *Course frequency:* irregular	

Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Detailliertes Verständnis der Funktionsweise der besprochenen Detektortypen sowie deren Anwendung	3 C

Examination requirements: ECTS-Bedingungen de	

Admission requirements: none	**Recommended previous knowledge:** Einführung Detektorphysik
Language: English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 1
Maximum number of students: not limited	

Additional notes and regulations: SP KT

Georg-August-Universität Göttingen **Module M.Phy.5807: Particle Physics III - of and with leptons**	6 C 6 WLH

Learning outcome, core skills: After successful completion of this module, students should be familiar with the properties and interactions of leptons as well as with experimental methods and experiments which lead to their discovery and are used for precise studies.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Lecture and exercises - Particle Physics III	
Examination: Oral examination (approx. 45 minutes) **Examination requirements:** Discovery of leptons, properties of leptons, weak interactions and V-A structure, neutral currents, standard model of particle physics, e+e- physics at LEP, fermion pair production at varying center of mass energy, lineshape of cross-section at Z-pole, number of light neutrino generations, forward-backward-asymmetry, tau-polarisation, e+e- physics at the LHC, (g-2)_myon, neutrinos and neutrino oscillations, solar neutrinos, atmospheric neutrinos, long-baseline experiments, neutrino factories, neutrino mass, neutrinoless double-beta decay.	6 C

Admission requirements: none	**Recommended previous knowledge:** Introduction to Nuclear/Particle Physics
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** Master: 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.Phy.5808: Particle Physics 3 - of and with leptons**	6 C 6 WLH

Learning outcome, core skills: **Lernziele** : Entdeckung der Leptonen, Eigenschaften der Leptonen, schwache Wechselwirkung und V-A Struktur, neutrale Ströme, Standardmodell der Teilchenphysik, e+e- Physik bei LEP, Fermionpaar-Produktion bei verschiedenen Schwerpunktsenergie, Lineshape des Wirkungsquerschnitts am Z-Pol, Anzahl leichter Neutrino-Generationen, Vorwärts-Rückwärts-Asymmetrie, Tau-Polarisation, e+e- Physik bei ILC, (g-2)myon, Netrinos und Neutrinooszillationen, solare Neutrinos, athmosphärische Neutrinos, long-baseline Experimente, Neutrino-Fabriken, Neutrino Masse, neutrinoloser Doppel-Betazerfall der Neutrinos **Kompetenzen** : Die Studierenden sollen die Eigenschaften und Wechselwirkungen der Leptonen erlernen und sich mit den experimentellen Methoden und Experimente zu deren Entdeckung bzw präzisen Untersuchung vertraut machen.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: Particle Physics 3 - of and with leptons	4 WLH
Course: Particle Physics 3 - of and with leptons	2 WLH

Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Konzepte und Experimente zu Entdeckung, Eigenschaften und Wechselwirkung der Quarks	6 C

Admission requirements: keine	**Recommended previous knowledge:** Einführung in die Kern-/Teilchenphysik (B.Phy.504)
Language: German, English	**Person responsible for module:** Prof. Dr. Arnulf Quadt
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** from 5
Maximum number of students: 30	

Additional notes and regulations: Bachelor/Master ab 5. FS (KT)

Georg-August-Universität Göttingen **Module M.Phy.5809: Axiomatic Quantum Field Theory**	3 C 3 WLH

Learning outcome, core skills: **Acquisition of knowledge:** Axiomatic settings and general structure theorems of relativistic quantum field theory; Symmetries and representations; Exact models (two spacetime dimensions, especially with conformal symmetry). **Competences:** The students shall be familiar with the model-independent concepts and structures of relativistic Quantum Field Theory. They understand the transfer between complementary approaches.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Axiomatic Quantum Field Theory (Lecture)	2 WLH
Examination: Written or oral examwritten (120 min.) or oral (ca. 30 min.) exam **Examination requirements:** Mastery of the conceptual framework and elementary methods of proof. Application in concrete situations.	3 C

Course: Axiomatic Quantum Field Theory (Exercise) *Contents*: in-class problems	1 WLH

Admission requirements: none	**Recommended previous knowledge:** Classical Field Theory I, QM I, II
Language: English	**Person responsible for module:** apl. Prof. Dr. Karl-Henning Rehren
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.Phy.581: Advanced Topics in Nuclear and Particle Physics I**	6 C 6 WLH

Learning outcome, core skills: **Learning outcome:** After successful completion of the modul students will be able to understand and apply advanced concepts of Nuclear and Particle Physics to current research topics. **Core skills:** Students will be able to describe and discuss state-of-the-art problems of Nuclear and Particle Physics.	**Workload:** Attendance time: 84 h Self-study time: 96 h

Course: A Course (6 C) in the field of Nuclear and Particle Physics	
Examination: Written examination (120 Min.) or oral examination approx. 30 Min.) or talk (approx. 30 Min.),2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Nuclear and Particle Physics	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.582: Advanced Topics in Nuclear and Particle Physics II**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the modul students should be familiar with advanced concepts of Nuclear and Particle Physics	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: A Course (3 C) in the field of Nuclear and Particle Physics	2 WLH
Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Nuclear and Particle Physics	3 C

Course: A Course (3 C) in the field of Nuclear and Particle Physics	2 WLH

Examination: Written exam (120 min) or oral exam (ca. 30 min) or talk (ca. 30 min), 2 weeks preparation time **Examination requirements:** Advanced experimental techniques or theoretical models in Nuclear and Particle Physics	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.586: Seminar Advanced Topics in Nuclear and Particle Physics**	4 C 2 WLH

Learning outcome, core skills: After successful completion of this module, students should be able to reproduce and present complex chains of arguments, assess their own and other students' presentation critically.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Seminar Advanced Topics in Nuclear and Particle Physics	
Examination: Lecture4 weeks preparation time (approx. 60 minutes) **Examination prerequisites:** Active participation **Examination requirements:** Preparation of complex topics for presentation and scientific discussion.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module M.Phy.603: Writing scientific articles**	6 C 2 WLH

Learning outcome, core skills: **Objective:** Basics of writing a scientific paper, form and and content of a Scientific paper, correspondence with scientific journals, understanding and imparting of content of current research, scientific discussion with co - authors **Competences:** After successfully completing the module students should know how to... • write a scientific article • submit a publication in the respective field • impart their independently developed effort	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Workshop	1 WLH
Course: Accompanying Seminar	1 WLH
Examination: written report (max. 20 S.), not graded **Examination prerequisites:** active participation	6 C

Examination requirements: a) Writing scientific articles b) Submit sciientific publications	

Admission requirements: The Bachelor Thesis has to... • meet high academic standards • be a scientific progress in the science • be an independent performance The determination of the access authorization is performed by the module responsible. She/He may request the opinion of an authorized examinator in the related field.	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Dean of Studies of the Faculty of Physics
Course frequency: each semester; nach Bedarf	**Duration:** 2 semester[s]
Number of repeat examinations permitted: three times	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.A11: Tropical animal husbandry systems**	6 C 4 WLH

Learning outcome, core skills: Students are able to: understand the impact of the natural and economic environment on the evolution of different types of husbandry systems as well as on their orientation and intensity of production; gain understanding for parameters that have to be considered when aiming at the improvement of livestock husbandry systems within a given framework; individually analyse and present a specific tropical livestock production system.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Tropical animal husbandry systems (Lecture,Seminar) *Contents*: This module provides an extensive overview on the different forms of animal husbandry systems in developing and transformation countries of Africa, Asia and Latin America, ranging from camel nomadism in deserts to beef ranching and intensive dairying in tropical highlands. The system-specific strategies of livestock management are analysed in view of their ecological and economic sustainability. The (potential) interactions of livestock with other components of the farming system are explored, thereby differentiating between market and subsistence oriented systems. The role of additional factors influencing livestock production systems such as cultural, social, economical and political frame conditions are discussed. Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., Courbois, C. 1999: Livestock to 2020. The next food revolution. FAO Discussion Paper 28, FAO Rome, Italy; Devendra, C., Thomas, D., Jabbar, M.A. and Zerbini, E., 2000: Improvement of Livestock Production in Crop-Animal Systems in Agro-ecological Zones of South Asia. ILRI, Nairobi, Kenya; Falvey, L., Chantalakhana, C. (eds) 1999: Smallholder Dairying in the Tropics. ILRI, Nairobi, Kenya	4 WLH
Examination: Written exam (90 minutes, 75%) and oral seminar presentation (ca. 15 minutes, 25%) **Examination requirements:** abiotic and biotic conditions of animal husbandry in the (sub-)Tropics; characteristics, opportunities/constraints of pastoral, agro-pastoral, silvo-pastoral, aquatic, industrial and urban systems; species-specific management and production (cattle, sheep, goat, camel, yak, pig, poultry).	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge (B.Sc. level) of plant and animal sciences or agricultural economics
Language:	**Person responsible for module:**

English	Prof. Dr. Eva Schlecht
Course frequency: each winter semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., Courbois, C. 1999: Livestock to 2020. The next food revolution. FAO Discussion Paper 28, FAO Rome, Italy; Devendra, C., Thomas, D., Jabbar, M.A. and Zerbini, E., 2000: Improvement of Livestock Production in Crop-Animal Systems in Agro-ecological Zones of South Asia. ILRI, Nairobi, Kenya; Falvey, L., Chantalakhana, C. (eds) 1999: Smallholder Dairying in the Tropics. ILRI, Nairobi, Kenya

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.A14: Organic livestock farming under temperate conditions**	6 C 4 WLH

Learning outcome, core skills: Animal nutrition and animal health: Students have a basic understanding of farm animal nutrition and health management; they understand the challenges emerging in organic livestock systems related to both animal nutrition and animal health and know how to assess, quantify, evaluate and approach these challenges. Animal welfare: Students have a basic understanding of animal welfare, familiarise with different organic husbandry systems, practical problems and scientific concepts including how to assess animal welfare both at farm and system level. Sustainable forage production systems: Students are able to assess the relationships between sward management and structural (yield, botanical composition) and functional (nutrient efficiency) sward characteristics.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Animal Welfare (Lecture) *Contents*: Principles of animal welfare in relation to organic farming; scientific methods of welfare assessment.	1,33 WLH
Course: Animal nutrition and animal health (Lecture) *Contents*: Principles and regulations of organic livestock farming in Europe; Nutrition in organic cattle, pigs and poultry; Animal health and production diseases; Production diseases in organic cattle, pigs and poultry; Health management in organic livestock farms	1,33 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of basic terms relevant to organic livestock systems; insights into aspects of feeding, healthcare, welfare, forage production and forage quality assessment; linkages and interdependencies between the discussed fields.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge (B.Sc. level) of animal and forage sciences.
Language: English	**Person responsible for module:** Dr. Margret Krieger
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

35	

Additional notes and regulations:

Literature:

Appleby, M.C., Hughes, B.O. (eds) 1997: Animal welfare. CAB International, Wallingford; Vaarst, M. et al. (eds.) 2004: Animal health and welfare in organic Agriculture. CAB International, Wallingford; Hopkins, A. 2000: Grass, its production and utilization. Blackwell Science, Oxford, UK; Cherney J.H. 1998: Grass for dairy cattle CABI Publishing, Exon, UK; Frame, J. 1992: Improved Grassland Management. Farming Press Books, Ipswich, UK; Marshall, A. & Collins, R. (eds.) 2018: Improving grassland and pasture management in temperate agriculture. Burleigh Dodds Science Publishing Limited, Cambridge, UK.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.A15M: Scientific writing in natural sciences**	6 C 4 WLH

Learning outcome, core skills: In the course of their study programme, when compiling their MSc thesis and for their further (academic) career, students have to deliver a variety of scientific texts. Therefore, this module aims at presenting and discussing the main principles of such texts. It provides training in how to write different types of essays, abstracts, grant winning proposals and complex texts (chapters) in preparation and writing of the master thesis research. At successful completion of this module, participants will be able to: • differentiate the structure and format of various types of scientific texts; • search scientific literature , set up and manage an electronic literature database and compile reference lists; • write term papers, grant proposals, conference abstracts, and final thesis (chapters); • compile scientific tables and figures and be able to decide which type of data is best expressed in which format; • apply the rules of good scientific practice; • give and receive constructive feedback on scientific texts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Scientific writing in natural sciences *Contents*: To provide participants with theoretical basics and practice these, the module will offer a mixture of lecture and exercises. Within the course a variety of facets and techniques of scientific writing will be imparted that graduate SIA students should be able to master. Consequently, participants are introduced to scientific literature search and analysis, good scientific practice and how to avoid plagiarism. Additionally, guidelines for creating concise tables and figures are presented. To be prepared for their master thesis work, students will be taught how to write different scientific text documents such as grant proposals and conference abstracts. By reviewing and discussing a scientific article and peer-reviewing an abstract of a fellow student by using an online tool, module participants will train how to give and receive constructive feedback. Finally, students will choose a topic for their term paper (see below) to further apply the newly acquired knowledge.	
Examination: 3 short written assignments (approx. 4 pages, 50%) are to be handed in during the semester and one major text (term paper, approx. 6 pages 50%) is to be submitted at the end of the semester.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of Word (Microsoft or Open Office) and Adobe Acrobat.
Language: English	**Person responsible for module:** Prof. Dr. Eva Schlecht

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 30	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E02: Agricultural price theory**	6 C 4 WLH

Learning outcome, core skills: Significance of prices from individual and societal viewpoint, agricultural price structure, role of technical change, vertical and spatial price formation, price formation in quota markets, futures and forward contracts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agricultural price theory (Lecture) *Contents*: This module is designed to provide students with an introduction to the theory and measurement of price formation on agricultural markets. Students will learn about price formation and price linkages over space and time, and how prices on markets in different locations and/or for products of different levels of processing are linked with one another. They will also learn about special examples of price determination that are unique (land markets) or especially common (markets influenced by quota schemes) in agriculture. A final focus will be placed on future markets and their possible use as a risk management tool in agriculture and agribusiness. Vorlesungsbegleitende Materialien	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Knowledge of impact of prices from an individual and macroeconomic point of view, of agricultural price structure as well as the importance of the technical progress, vertical and spatial price formation, price formation in the farm land market and the quoted market, as well as of commodities future markets	6 C

Admission requirements: none	**Recommended previous knowledge:** Background in agricultural markets and policy recommended
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each winter semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 60	

Additional notes and regulations:

Literature:

A script and a variety of supplemental reading will be provided.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E05M: Marketing research**	6 C 4 WLH

Learning outcome, core skills: Students · are able to describe how marketing research relates to the marketing concept · are able to outline the steps in the marketing research process and show how the steps are interrelated · know the factors to consider in defining the marketing problem or opportunity · are able to develop a research design · are able to state the specific advantages of the most important methods of data collection · know fundamentals of sampling theory · acquire personal skills for oral and written presentations in teamwork.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Marketing researches (Lecture,Seminar) *Contents*: • Steps and management of marketing research • Development of research design • Methods of data collection • Oral and written presentation of market research topic Aaker, D.A., Kumar, V., Leone, R.P., Day, G.S. (2013): Marketing research. 11th ed., Hoboken: Wiley; Nunan, D., Birks, D.F., Malhotra, N.K. (2020): Marketing research, 6th ed., Harlow: Pearson Education	4 WLH
Examination: Oral examination (30 minutes) 60%, oral and written presentation (20min + 5 p.) 40%	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge on marketing
Language: English	**Person responsible for module:** Prof. Dr. Katrin Zander
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Additional notes and regulations:

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E06: International organic food markets and marketing**	6 C 4 WLH

Learning outcome, core skills: Students • are able to describe international markets for organic food • know about international organic regulations • are able to outline the steps for developing a marketing strategy • know how to develop a marketing concept on international markets • acquire personal skills for oral and written presentations in teamwork.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: International markets and marketing for organic products (Lecture,Seminar) *Contents*: • Analysis of international markets for organic products • Organic regulations • Basics of food marketing for exporters • Oral and written presentation of marketing topic Vahlen, Munich. Armstrong, G, Kotler, K., Opresnik, M.O. 2016: Marketing: An Introduction, 13th ed., Pearson, Harlow, UK. Hollensen, S., Opresnik, M.O. 2015: Marketing: A Relationship Perspective.	4 WLH
Examination: Presentation (ca. 20 minutes) with written outline (max. 5 pages) (40%) and oral exam (approx. 30 minutes) (60%) **Examination requirements:** Knowledge of tasks and approaches in market research as well as knowledge of data survey methods, prognosis methods and analysis methods.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge on marketing
Language: English	**Person responsible for module:** Prof. Dr. Katrin Zander
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Additional notes and regulations:

Armstrong, G, Kotler, K., Opresnik, M.O. 2016: Marketing: An Introduction, 13th ed., Pearson, Harlow, UK.

Hollensen, S., Opresnik, M.O. 2015: Marketing: A Relationship Perspective.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E11: Socioeconomics of rural development and food security**	6 C 4 WLH

Learning outcome, core skills: Students learn concepts of development and problem-oriented thinking in a development and food security policy context. The identification of interdisciplinary linkages is trained. Building on case-study analyses, course participants can pinpoint appropriate economic and social policies and assess their impacts. These qualifications can also be transferred to unfamiliar situations.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Socioeconomics of rural development and food security (Lecture) *Contents*: This module provides students with an overview of socioeconomic aspects of hunger, malnutrition, and poverty in developing countries. Apart from more conceptual issues and development theories, policy strategies for sustainable rural development and poverty alleviation are discussed and analyzed. Special emphasis is put on problems in the small farm sector. Empirical examples are used to illustrate the main topics.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Concepts and measurement of hunger, malnutrition, and poverty; classification and evaluation of rural development policies	6 C

Admission requirements: none	**Recommended previous knowledge:** Prior knowledge of microeconomics at the BSc level is useful
Language: English	**Person responsible for module:** Prof. Dr. Liesbeth Colen
Course frequency: each winter semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** until 1
Maximum number of students: 120	

Additional notes and regulations:

Literature:

Text books, research articles and lecture notes.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E17M: Management and management accounting**	6 C 4 WLH
Learning outcome, core skills: The main aim of the module is to acquaint students with the theory and practice of management and management accounting/control, and the role of environmental, social and governance issues therein. More specifically, the aims of the module are: • To provide students with insights into different theoretical perspectives; an understanding of the implicit assumptions held by each perspective as well as the implications of these perspectives for management practice and research; • To provide students with the conceptual and practical skills necessary to effectively understand and critically analyse management/corporate practice; • To provide students with practical experience in and knowledge about “managing and accounting for sustainability”; • To enable students to understand why traditional accounting and accountability do not serve managers and other corporate stakeholders well in the light of increasing demands for social accountability, transparency and social responsibility	**Workload:** Attendance time: 60 h Self-study time: 120 h
Course: Management and management accounting (Lecture,Seminar) *Contents*: • The fundamentals of management practice, the roles and functions undertaken by managers; • The development and evolution of management theory; • A critical reflection on the wider responsibilities of management (incl. moral decision-making, managing for sustainability); • An introduction to the traditional accounting and accountability theory and practice; key management accounting and control systems and concepts; performance measurement and management; • The developments in new accounting and accountability tools and their role (and limitations) in supporting managerial decision making and increasing transparency on environmental, social and sustainability performance. Lussier, R.N. 2006: Management fundamentals – Concepts, Applications, Skill Development, Thomson, London, UK; Robbins, S.P., Coulter, M. 2007: Management, 9th edition, Pearson, Upper Saddle River; Drury, C. 2005: Management Accounting for Business, Thomson, London, UK; Atkinson, A.A., Kaplan, R.S., Young, S.M. 2004: Management Accounting, 4th Edition, Upper Saddle River.	4 WLH
Examination: Presentation (ca. 15 minutes, 50%) and written examination (90 minutes, 50%) **Examination requirements:** Students should demonstrate a sound understanding of the management / management accounting concepts and frameworks (written exam). Students are also expected to apply the knowledge acquired in class to a case study company and to present and discuss their findings with others (workshops incl. role play and group work).	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Bettina König
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Additional notes and regulations:

Literature:

Lectures and short lectures combined with facilitated group discussion; seminars include case study-based group work and exercises

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E18: Organization of food supply chains**	6 C 4 WLH

Learning outcome, core skills: Students are introduced into various issues of the organizational design of food supply chains and agribusiness firms. Students learn to write a seminar paper and they are also able to independently acquire additional knowledge by advanced literature search. The preparation and presentation of selected topics as well as the contribution to oral discussions during seminar sessions will be examined. The comprehensive overview of various organizational theories enables the students to identify and classify complex organizational problems in food supply chains and develop solutions.	**Workload:** Attendance time: 68 h Self-study time: 112 h

Course: Organization of food supply chains (Seminar) *Contents*: The module introduces into basic concepts of organizational design in food supply chains and the agribusiness sector. The students write a paper based on the combination of a selected organizational theory and a practical example. The students present their papers and discuss the various organizational issues with high importance for the food and agribusiness sector. Key aspects of the lecture are: - Stakeholder management for farms and agribusiness firms - Efficient organizational design of food supply chains: Contracts, open markets, vertical integration - Competitive strategy and the organizational design of food supply chains - Certification schemes from an organizational perspective - Cooperatives and the organization of food supply chains - Transparency of food supply chains The seminar makes use of various organizational theories and provides students with insights into the practical implications of these theories. Vorlesungsbegleitende Materialien	4 WLH
Examination: Homework (max. 15 pages, 65%) and 2 presentations (about 45 min, 20% and about 15 min, 15%) **Examination requirements:** Ability to write a paper based on the combination of a selected organizational theory and a practical example, to present the paper, serve as a discussant of the paper of another group and discuss the various organizational issues with high importance for the food and agribusiness sector. 1. Presentation: ca. 45 minutes presenting the contents of the own homework; 2. Presentation: ca. 15 minutes discussing the homework of another group of participants.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge food supply chains and agribusiness management
Language: English	**Person responsible for module:** Prof. Dr. Silke Hüttel

Course frequency: each summer semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 21	

Additional notes and regulations:
Students are not allowed to take the module M.Agr.0053 if they have passed M.SIA.E18.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E19: Market integration and price transmission I**	6 C 4 WLH

Learning outcome, core skills: Students gain insight into the functioning of the price mechanisms on agricultural markets and into the determinants of market integration. They learn to apply econometric analysis methods to the study of horizontal and vertical price transmission processes (time series methods, cointegration, including non-linear cointegration and non-linear error correction models).	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Market integration and price transmission I (Lecture) *Contents*: Theory and empirical analysis of agricultural market integration A list of seminal papers (Gardner, Goodwin and Fackler, Barrett and others) will be provided to students Lecture notes and presentations are made available on StudIP	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Students are able to explain the economic theory of price transmission and market integration (e.g. how can we explain the prevalence of asymmetric price transmission on agricultural markets), and are able to apply the most important methods of empirical price transmission analysis (in particular the econometric estimation of error correction models).	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of econometrics
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: Every second summer semester (Start: 2021)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 40	

Additional notes and regulations:

Literature:

A list of seminar papers (Garnder, Ravallion, Goodwin, Fackler, Barrett) will be circulated to students, together with a list of recent applications.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E24: Topics in rural development economics I**	6 C 4 WLH

Learning outcome, core skills: The objective of this course is to acquaint Master students with the reading and understanding of scientific journal articles on relevant topics of rural development economics. Student should learn how to develop a scientific research question, choose appropriate research methods and strucutre a scientific article.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Topics in Rural Development Economics I (Lecture) *Contents*: This course will provide Master Students with an overview of relevant topics in rural development economics, which will also enable them to develop own research questions and study approaches in this field. The module is structured as a reading course, building on selected articles from relevant international journals. Students are required to read announced articles before the classroom sessions, in order to enable a critical debate in class. The articles selected for the course are clustered around key topics relevant to rural development economics, such as listed below. Tentative Topics 1. The food system transformation and smallholder farmers 2. Rural livelihood strategies and income diversification 3. Adoption and impact of modern agricultural technology 4. Economics of nutrition and health 5. Gender and intra-household resource allocation Master students will have to write a summary of a selected journal article. Furthermore, the course should enable them to develop own research questions and study approaches in the field of rural development economics.	4 WLH
Examination: Presentation (approx. 10 minutes, 40%) and homework (max. 4 pages, 60%) **Examination requirements:** Constructive participation in the discussion during the lectures, which requires the reading of the articles indicated. In both the written and the oral assignments, students are supposed to demonstrate that they are able to identify the most relevant aspects of the articles and to critically evaluate the research questions, the methods and the results of the studies.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency:	**Duration:**

each summer semester; Göttingen	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:
Literature:

Selected articles from academic journals and book chapters

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E31: Strategic management**	6 C 4 WLH

Learning outcome, core skills: • The contents and framework of strategic management; • An introduction to organisational & business strategies; • The importance of values and purpose in defining organisation's strategic goals; • The management of stakeholder relations; • Performance management and strategic control; • The management of strategic change;	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Strategic management (Lecture,Seminar) *Contents*: • Concepts and frameworks used in strategic management; • The importance of values and purpose in defining an organisation's strategic goals; • The analysis of the complex environment of agrifood organisations and how it shapes the strategic behaviour of members of the value chain and an organisation's competitive environment; • A critical review of strategic frameworks (e.g. Porter's five forces, life cycle analysis); • The analysis of the internal environment (value creating activities, capabilities and resources); • An introduction to organisational and business strategies; • The management of stakeholder relations; • The relationship between organisation and strategy; • The management of strategic change and the role of strategic leadership.	4 WLH
Examination: Oral presentation (approx. 20 minutes, 50%) and written examination (60 minutes, 50%) **Examination requirements:** Students should demonstrate a sound understanding of the strategic management concepts and frameworks. Further requirements include: development of a research design to contribute to the development of a scenario analysis; collection and analysis of data in groups.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Bettina König
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

not limited	

Additional notes and regulations:
Lectures and short lectures combined with facilitated group discussion; seminars include research based learning elements such as case studies and research activities involving students (e.g. scenario analysis).

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E34: Economic Valuation of Ecosystem Services**	6 C 4 WLH

Learning outcome, core skills: Students get introduced to the essential concepts and methods of interdisciplinary Ecosystem Services (ES) research. Special emphasis will be put on the integrated and systematic assessment of ES, including their dependencies of and impacts on biodiversity, climate change and development. Students will familiarize themselves with common methods of economic valuation of ES and learn about different examples of practical implementation in developing countries. Within the scope of a presentation and a term paper, students will review and evaluate selected scientific literature, process the findings in an environmental-economic analysis and compile results and derived policy recommendations for better maintenance, sustainable use and integration of ES into development planning.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economic Valuation of Ecosystem Services in Developing Countries (Seminar) *Contents*: • Integrated and interdisciplinary analysis of ES • Dynamic linkages between ES, biodiversity, climate change and development • Methods and applications of economic valuation of ES • Implementation examples from developing countries • Integration of ES in development planning (entry points to the policy cycle) • Practical application in a case study (literature work, monetary quantification)	4 WLH
Examination: Term paper (max. 20 pages, 70%) and oral presentation (approx. 30 minutes, 30%) **Examination requirements:** For a given case study students will develop appropriate analytical strategies and implement them with the help of identified scientific literature. Methodological knowledge provided during the lectures will be essential for the case work. Most relevant results will be summarized in a presentation. The compilation of the term paper requires basic techniques of scientific literature research.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.Agr.0079 Environmental Economics and Policy or similar skills
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each winter semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

30	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E37: Agricultural policy analysis**	6 C 6 WLH

Learning outcome, core skills: • Students get an overview on EU institutions and the history of the EU's common agricultural policy (CAP) • Students learn different theories and methods for the analysis of agricultural policies • Students learn how to analyse different policy measures and instruments and evaluate them	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agricultural policy analysis (Lecture) *Contents*: **1. Introduction into Economic Policy and Economic Theory** Definition of agricultural policy, Analytical framework of economic analysis, Objectives, measures, institutions, The coordination process, a model for the economic process **2. Market Failure** Public Goods & externalities, Market power & monopolistic behavior, State intervention due to Instability of markets, State intervention & government failure, principal-agent theory **3. The European Union – A short introduction** History of the EU, the importance of the agricultural sector in the EU, institutions and political structure of the EU, decision-process in the EU, **4. The EU's common agricultural policy: Description and Analysis** The history and analysis of the Common Agricultural Policy (CAP) of the EU **5. Introduction into Environmental policy** Objectives, measures and analysis and interaction with agricultural policy **Literatur** : B. Hill (2013): Understanding the Common Agricultural Policy, Earthscan A. Cunha & A. Swinbank (2011): An Inside View of the CAP Reform Process, Oxford University Press A. Oskam, G. Meester & H. Silvis (2011): EU policy for agriculture, food and rural areas, Wageningen, University Press Swinnen, Johan F.M. (2008): The Perfect Storm – the political Economicy oft he Fischler Reforms oft he Common Agricultural Policy, Centre for European Policy Studies, Brussels Krugman, P.R., M. Obstfeld & M.J. Melitz (2011), International Economics (9.Ed.), Pearson B. Hill (2013): Understanding the Common Agricultural Policy, Earthscan	6 WLH

A. Cunha & A. Swinbank (2011): An Inside View of the CAP Reform Process, Oxford University Press A. Oskam, G. Meester & H. Silvis (2011): EU policy for agriculture, food and rural areas, Wageningen, University Press Selected readings and lecture notes / slides provided by the lecturer on StudIP	
Examination: Written examination (90 minutes) **Examination requirements:** • Fundamental knowledge of EU institutions and the EU's common agricultural Policy (CAP) • Knowledge of different theories and methods to analyze agricultural policies • Analysis of different measures and instruments of the EU's common agricultural policy (CAP)	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic micro- and macroeconomics
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: Every second summer semester (Start: 2020)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 50	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E39: Critical and Collective Perspectives on the Global Food System**	6 C 4 WLH

Learning outcome, core skills: Students: will be aware of development tendencies of the global food system; will be able to critically analyse the global food system informed by political ecology; will be introduced to collective action theory and “Commoning” approaches in the Global Food System;will be familiar with different conceptions of society-nature relationships; will be acquainted with methods of political ecology will be acquainted with transition and transformation studies; will be acquainted with food regime studies; will be able to critically evaluate and apply the corresponding approaches	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Critical and Collective Perspectives on the Global Food System (Lecture,Seminar) *Contents*: The course introduces students to critical approaches and studies of the global food system. It introduces the concepts, theories and methods of political ecology, food regime theory collective action theory and transitions studies and discusses these in relation to empirical studies worldwide.	4 WLH
Examination: Presentation (approx. 45 minutes, 40%) and term paper (max. 15 pages, 60%) **Examination prerequisites:** Submission of protocols (literature-related questions) in regard to 80% of assigned readings (max 8 articles) **Examination requirements:** Students will need to demonstrate: Understanding of political ecology, collective action and commoning perspectives, transition approaches and critical perspectives; understanding of a food systems approach; ability to apply political ecology approaches to the food system and its change; knowledge of global drivers of food and agricultural production systems; academic presentations, discussion and writing skills. Details on Examination: Presentation 20 min. + 25 minutes guided discussion (student-led seminar) (40%) and term paper (15 pages, 3000 words) (60%)	6 C

Admission requirements: none	**Recommended previous knowledge:** Background in agricultural and environmental policy and economics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Thiel
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Literature will be circulated to students at the beginning of term and throughout

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E40: Agriculture, Environment and Development**	6 C 4 WLH

Learning outcome, core skills: This module treats the economic and political causes of environmental problems in the context of agriculture and development. Global challenges such as climate change, sustainable development and poverty are in the focus. Selected basic concepts of environmental and resource economics are addressed, followed by a deepened analysis of important aspects such as management of common pool resources, pollution control and climate protection in international agri-environmental contexts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agriculture, Environment and Development (Lecture,Exercise,Seminar) *Contents*: The module consists of a combination of lectures and tutorials during the first semester term. Theoretical concepts from lectures will be deepened and complemented by examples from scientific research and practical applications. During the second semester term students present an analysis of a scientific case study from selected topics in the seminar. This enables students to deepen the contents learned in an independent and targeted manner and to apply concepts in the evaluation of a case study. Contents: • Basic concepts (market failure, natural resources, natural capital) • Efficiency and sustainability: Concepts, criteria and application • Economics of common pool resources in developing countries • Economics of land use in developing countries • Economics of water use in developing countries • Poverty, development and environment • Agriculture and climate change • Global initiatives and international agreements on sustainable development and climate protection	4 WLH
Examination: Written exam (60 minutes, 70%) and presentation (approx. 20 minutes, 30%) **Examination prerequisites:** Regular attendance in seminar **Examination requirements:** Knowledge of selected basic concepts of environmental and resource economics. Understanding of important concepts such as economic efficiency and sustainability. Knowledge of important relationships between agriculture, resource use, sustainability and climate change in development contexts. Discussion of current courses of action.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Meike Wollni
Course frequency: each summer semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.E42: Agriculture, Nutrition and Sustainable food systems**	6 C 4 WLH

Learning outcome, core skills: Students learn how food systems connect the decision on what we eat, how our food is produced, processed and distributed, with human health and planetary health outcomes. Students can analyse the drivers of dietary decisions using a micro-economic approach and can discuss how policies can steer diets in more healthy and sustainable directions, applying to both low- and high-income countries. Students can analyse household level consumption data to construct dietary indicators, the cost of healthy diets and analyse socio-economic drivers of dietary outcomes.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agriculture, Nutrition and Sustainable food systems (Lecture) *Contents*: The module consists of two parts. During the lectures, students are introduced to the global challenges of food security, nutrition, health and sustainability. A micro-economic approach is used to analyse the drivers of dietary decisions. Examples of policies that aim to steer diets in more healthy and sustainable directions are discussed. Course material consists of presentations and lecture notes. In the second part of the module, students use statistical software (STATA) to analyse household consumption survey data, construct dietary indicators and perform a statistical analysis of socio-economic drivers of diets, nutrition and health outcomes. *Course frequency:* each winter semester	4 WLH
Examination: Written examination (90 minutes, 50%) and assignments and presentation (50%) **Examination requirements:** Students are able to explain the concepts related to food systems, to analyse food policies, and to generate and interpret relevant statistics related to nutrition, food policies and global sustainability. In a written assignment, students provide critical analysis of a specific food system and/or food policy intervention.	6 C

Admission requirements: Introduction to Econometrics (B.WIWI-VWL.0007) or Econometrics I (M.WIWI-QMW.004), or equivalent introduction in statistics or econometrics	**Recommended previous knowledge:** Prior introductory knowledge of microeconomics and basic econometrics/statistics.
Language: English	**Person responsible for module:** Prof. Dr. Liesbeth Colen
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	
Maximum number of students: 25	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I03: Food quality and organic food processing**	6 C 4 WLH

Learning outcome, core skills: Students will be able to define food quality and quality systems in agriculture and food industry discuss principles of organic food production (agriculture, processing) according to EEC 2092/91) discuss and evaluate food processing techniques and quality assessment methods	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Food quality and organic food processing (Lecture) *Contents*: European and international legislation for organically produced agricultural commodities (focussing : Annex II, Annex VI EEC 2092/91; contracting, quality standards, product handling) Quality standard setting and the Organic Guarantee System Certification systems for organic and conventional products (overview, principles, concept, certification) Accreditation and accreditation agencies Process and product orientated food quality concepts and assessments; “holistic” quality definitions Processing techniques for organic food processing (different product groups) Quality assessment methods for small and medium-size enterprises Florkowski et al. 2000: Integrated View of Fruit and Vegetable Quality, Technomic; Welti-Chanes et al. 2001: International Congress on Engineering and Food, Volume I and II, Technomic; Luning et al. 2002: Food quality management, Wageningen Pers; Lawless et al. 1999: Sensory evaluation of Food, Kluwer; Kent et al.1994: Technology of cereals, Pergamon; Bidlack et al. 2000: Phytochemicals as bioactive agents, Technomic; Linden et al. 1994: New ingredients in food processing, CRC; Souci et al. 2000: Nutrition Tables, Medpharm	4 WLH
Examination: Presentation (ca. 20 minutes, 50%) and project work (max. 20 pages, 50%) **Examination requirements:** Knowledge about the quality of food in terms of concepts and criteria with focus on organic production. Insides in processing and management of organic food according the guidelines, standards and practices. Basic knowledge in the concepts of HACCP and QACCP.	6 C

Admission requirements:	**Recommended previous knowledge:**
none	Basic knowlegde in chemistry

Language: English	**Person responsible for module:** Dr. Nicolaas Busscher
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Additional notes and regulations:

Literature:

Florkowski et al. 2000: Integrated View of Fruit and Vegetable Quality, Technomic; Welti-Chanes et al. 2001: International Congress on Engineering and Food, Volume I and II, Technomic; Luning et al. 2002: Food quality management, Wageningen Pers; Lawless et al. 1999: Sensory evaluation of Food, Kluwer; Kent et al.1994: Technology of cereals, Pergamon; Bidlack et al. 2000: Phytochemicals as bioactive agents, Technomic; Linden et al. 1994: New ingredients in food processing, CRC; Souci et al. 2000: Nutrition Tables, Medpharm

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I10M: Applied statistical modelling**	6 C 5 WLH

Learning outcome, core skills: Students have a detailed understanding of the concepts of statistical modelling, regression analyses and analyses of variance. They are familiar with the basic concepts of 'linear models', 'generalized linear models' and 'non-parametric estimation procedures', which now belong to the standard methods in applied statistics. Students are able to practically apply these methods and carry out statistical analyses in soil, plant and animal sciences using the statistical software R. They are able to apply the acquired skills in the analysis of their own MSc (and PhD) datasets.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Applied Statistical Modelling (Lecture,Exercise) *Contents*: **Statistical analyses in animal science, soil science and plant sciences** (Lecture, computer practical) • Review of statistical concepts (boxplots, QQ plots, distributions, classical tests, • General aspects of hypotheses formulation and testing • Correlations, analyses of count and proportion data • Basic concepts of experimental design • Standard experimental field designs • Introduction to the software R • Regression (multiple linear, non-linear and logistic) • Statistical modelling, model types and model simplifications • Transformations • Analyses of variance, post-hoc tests • Non-parametric test procedures • Analysis of covariance • Particularities of unbalanced designs • Formulation of statistical models and basic programming in R • Linear mixed models	5 WLH
Examination: Written examination (120 minutes) **Examination requirements:** One written exam with two parts. Knowledge of basic statistical terms and approaches, linear and generalized linear models and non-parametric estimation procedures. Ability to apply the methods and models to real data by using the software package R.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge (B.Sc. level) of applied statistics
Language: English	**Person responsible for module:** Prof. Dr. Bernard Ludwig
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations:
Admission requirements:

Registration

Literature:

Lecture notes

Crawley, M.J. 2012. The R Book, Wiley

Dobson A. & Barnett A. (2008) An Introduction to Generalized Linear Models, Chapman & Hall.

Field, A., Miles, J., Field, Z. 2012. Discovering Statistics using R, SAGE

Mrode R. A. (2005) Linear Models for the Prediction of Animal Breeding Values, CABI Publishing.

Searle S. R. (1982) Matrix Algebra Useful for Statistics, Wiley Series in Probability and Statistics.

Welham, S.J., Gezan, S.A., Clark, S.J., Mead, A. 2014. Statistical Methods in Biology. Design and Analysis of Experiments and Regression, CRC Press, Boca Raton.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I11M: Free Project**	6 C

Learning outcome, core skills: Students are able to plan and carry out a scientific project. This includes critical evaluation of publications and the ability to apply acquired knowledge to problems in the field or in economic or social sciences. Students are also able to present results and discuss them on the basis of their knowledge.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Free project *Contents*: A topic for a project is chosen in agreement with the instructor. The aim of the project is to gain profound scientific knowledge on the chosen topic. This can include experimental work. The result of the project can be a written thesis, an oral presentation and/ or an electronically stored result.	
Examination: Project work (max. 15 pages or 4000 words) **Examination requirements:** In agreement with the instructor. Generally project work (max. 15 pages or 4000 words).	6 C

Admission requirements: Written agreement with instructor on topic, form and time frame for the project.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: each semester; Göttingen oder Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Scientific publications on the topic agreed upon with the instructor.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I12: Sustainable international agriculture: basic principles and approaches**	6 C 4 WLH

Learning outcome, core skills: Students • are able to describe the main bio-physical and socio-economic drivers shaping agricultural production systems and land and resource use strategies; • have knowledge of relevant ecological, economic and social indicators • can describe and apply integrated approaches of indicator use for the evaluation of a system's sustainability	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Sustainable International Agriculture: basic principles and approaches (Lecture) *Contents*: In view of global change spanning from population growth, migration, and urbanization to climate change, land degradation and water scarcity, the sustainable use of human and natural resources for the continued provision of quantitatively and qualitatively adequate food poses a major challenge to all stakeholders involved in agricultural production worldwide. This module therefore addresses the basic concepts and principles of sustainability and sustainable agriculture, in its ecological, economic and social dimensions. Approaches to determine the bio-physical and socio-economic sustainability of a land use systems and of agricultural value chains are evaluated, and possibilities to implement sustainable management strategies along the continuum of water, soils, plants, animals, producers and consumers are discussed, thereby also accounting for relevant temporal and spatial scales.	4 WLH
Examination: Written examination (90 minutes) **Examination requirements:** • general definitions and indicators for sustainable development; strong and weak sustainability; the substitution-paradigm and its limits; carrying capacity and critical natural capital; economic growth models; economic approaches for the quantification of sustainable development; SNA / green accounting; cost-benefit analysis. • dimensions of social sustainability; utilization of communal resources; McDonaldisation of agriculture; agriculture and social justice. • multi-functionality and farm-management; realization of sustainability concepts in the farm enterprise; agro-ecological systems and sustainable farm management; indicators for enterprise sustainability; controlling of sustainability; profitability of organic farming; collective forms of farming. • sustainability of livestock husbandry; environmental effects of animal keeping and their avoidance: a) GHG emissions and environmental pollution from animal holdings; b) overgrazing.	6 C

- concepts of sustainability; agroforestry systems; shifting cultivation; effects on soil fertility and sustainability.
- role of soils in ecosystems; soil types; soil functions and soil threats/degradation; physical, chemical and biological soil quality indicators; soil organic matter; soil as a carbon sink or source and greenhouse gas emissions; soil conservation; soil compaction.

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Eva Schlecht
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Lecture notes and reading materials distributed during the module;

Bell, S. & Morse, S., 2003. Measuring sustainability: learning by doing; Earthscan, London, UK. Bell, S. & Morse, S., 2008. Sustainability indicators: measuring the immeasurable? Earthscan, London, UK.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I13: Issues and methods in food business research**	6 C 4 WLH

Learning outcome, core skills: The aims of the module are: • To develop students' ability to analyse and evaluate management practices and discourses in the food sector according to multiple theoretical perspectives; • To appreciate contrasting perspectives; • To develop students' critical skills and to enable them to engage with current debates in food business research; • To introduce students to empirical research in the field of international food business; • To support students in the development of their dissertation and project work (e.g. constructing research questions about food business).	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Issues and methods in food business research (Seminar) *Contents*: In this module, we address the more contemporary debates and developments of food business theory and research. We explore, examine and discuss contrasting perspectives of contemporary issues of food business, from a practical and policy-oriented perspective, as well as from a theoretical point of view. We also investigate the research methods applied in food business studies. A particular interest lies in the advancement of knowledge in responsible and sustainable food business.	
Examination: Presentation (45 minutes) with hand-out (max. 2 pages) (50%) and written report (max. 4 pages, 50%) **Examination requirements:** Students should be able to critically engage in current debates about food business (with a particular focus on responsible and sustainable business) and reflect on the usefulness and limitations of methods applied in food business research. Students should demonstrate that they are able to identify, explain and discuss the key aspects of the literature investigated.	6 C

Examination requirements: ECTS-Bedingungen de	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Alle Herzig, Christian, Prof. Dr.
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	
Maximum number of students: 35	

Additional notes and regulations:
Lectures and group discussion

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I17: Sustainable diets**	6 C 6 WLH

Learning outcome, core skills: Students are able to describe the interactions of diets, sustainability and human nutrition/health. Students are able to assess the impacts of a dish/meal (as unit) on sustainability and nutrition parameters.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Sustainable diets (Lecture,Excursion) *Contents*: • Culture and cultural patterns of diets • Interactions of food quality and lifestyle on sustainability and human health • Healthy diets within sustainable food systems • Model diets such as Med. Diet and New Nordic Diet • Optimization of a dish/meal according sustainability and nutrition impacts • Role of organic food systems	6 WLH
Examination: Presentation (ca. 15 minutes, 50%) with written outline (max. 15 pages, 50%) **Examination requirements:** Knowledge of lifestyles and interaction with food quality (in selected countries). Knowledge of methods for the collection of environmental and nutritional parameters. Knowledge of legal requirements for the labelling of foodstuffs as well as guidelines for the processing of sustainable food products.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge on nutrition, statistics and environmental issues.
Language: English	**Person responsible for module:** Liliana Stefanovic
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Additional notes and regulations:

Literature:

Will be provides via the system2teach platform.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I19M: Participatory research methods for sustainability**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
This course will look at the importance of place-based, participatory and transdisciplinary research methods in sustainability science. Students will learn different participatory methods to capture the knowledge and aspirations of the different agents that operate in agricultural landscapes and will be able to integrate this knowledge in practical outcomes for sustainable land management. After successfully completing this module students should: • comprehend the fundaments of participatory research • be familiar with the different types of participatory research methods • be able to design and implement participatory processes This module contributes to the following skills: • performance of transdisciplinary processes • integration of knowledge and aspirations of different agents towards sustainable land management • data collection and analysis using participatory methods • group work techniques (organization of working schedule, team work) • presentation skills and communication of main research results	Attendance time: 56 h Self-study time: 124 h

Course: Participatory research methods for sustainability (Lecture,Seminar) *Contents*: The course is structured in three parts. An introductory part focuses on research principles of sustainability science, paying particular attention to the role of transdisciplinary and ethics in the participation processes. A second part showcases a broad suite of different participatory research methods (e.g. photo-voice, participatory mapping, storytelling) for sustainable landscapes management and land-use conflict resolution. The full research process is addressed, from participatory process design, the approaching and involvement of participants and the organisation and facilitation of participatory activities, to the analysis, integration and presentation of the outcomes. In the third part of the course, students have the opportunity to choose and design a protocol for a participatory study, applied to a specific geographical location and a specific problem, and share the insights of the process with the class. The first part will be outlined in lectures, the second part will take the form of seminars and the third part will consist of group work with a final presentation to the class where the different experiences will be critically discussed.	4 WLH

Examination: Presentation (approx. 30 minutes, 50%) and Term paper (max. 20 pages, 50%) **Examination requirements:** Presentation and critical analysis of a participatory research approach applied to a land-use topic of the students' choice.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Maria Chiara Camporese
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations:

Literature:

Bergmann, M. et al. (2012). Methods for Transdisciplinary Research: A Primer for Practice. Campus Verlag. Course materials to be provided.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I20: Agriculture and ecosystem services**	6 C 4 WLH

Learning outcome, core skills: This course will introduce students into the concepts of ecosystem services and human well-being, with a particular focus on their relevance for agriculture and other land uses. It will foster the ability of students to assume an interdisciplinary research perspective (including ecological, socio-cultural, and economic approaches) and to critically discuss and analyse the concept of ecosystem services in its multiple scientific, political and practical meanings.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agriculture and ecosystem services (Lecture,Exercise,Seminar) *Contents*: Global environmental assessments (e.g., the Intergovernmental Platform on Biodiversity and Ecosystem Services, IPBES) have highlighted that human well-being is critically dependent on ecosystem services – the benefits that nature provides to people. Depending on the particular land-use system and its social-ecological context, agriculture can either degrade or enhance such ecosystem services. This course gives an overview on the rising field of ecosystem services science. Focus will be on: • techniques for decision support, • practical applications of the approach in agriculture and other land-use sectors, and • linkages to other sustainability issues (e.g., biodiversity, climate change, water security, poverty). These topics will be outlined in lectures and deepened in seminars and field exercises, where key issues will be explored and critically discussed.	4 WLH
Examination: Presentation (approx. 30 minutes, 50%) and term paper (max. 20 pages, 50%) **Examination requirements:** Presentation and critical analysis of a case study that takes a particular ecosystem services problem in a land-use setting and geographic location of the participants' choice into focus.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Tobias Plieninger
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students:	

25	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I24: Modelling climate impacts on agroecosystems**	6 C 4 WLH

Learning outcome, core skills: The students have an overview of models used to capture climate change impacts on different agroecosystems and the effects of climate adaptation measures. The module teaches climate change impacts on various agroecosystems, adaptation measures and how these aspects can be captured by different types of statistical and process-based agricultural models. With this knowledge, the students are able understand and develop agricultural models to assess climate impacts, risks and resilience. In the last section, adaptation measures to climate change are modeled, discussed and evaluated using various methods and indicators.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Modelling climate impacts on agroecosystems (Lecture,Exercise,Seminar) *Contents*: The course gives an overview of climate change impacts across different agroecosystems, a solid understanding of climate and agricultural models and the projected climate impacts on the agricultural production, resilience and adaptation. In addition, short term climate and weather risks are discussed in the course. The lecture is in parallel with an exercise, where the students rebuild and develop own models in the statistic software R.	4 WLH
Examination: Oral examination (approx. 30 minutes, 50%) and written report (max. 7 pages, 50%) **Examination requirements:** Students write a written report which includes an data exercise in R and understand the content taught in the lecture.	6 C

Admission requirements: none	**Recommended previous knowledge:** First experience with the statistic software R is valuable.
Language: German, English	**Person responsible for module:** Prof. Dr. Christoph Gornott
Course frequency: each summer semester1	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:

Literature:

Shukla, Gleixner, Yalew, Schauberger, Sietz, Gornott, 2021: Dynamic vulnerability of smallholder agricultural systems in the face of climate change for Ethiopia, Environmental Research Letters.Laudien,

Schauberger, Makowski, Gornott, 2020: Robustly forecasting maize yields in Tanzania based on climatic predictors, Nature Scientific Reports.

Iizumi, T., Hirata, R., Matsuda, R. (2019) Adaptation to Climate Change in Agriculture, Springer, ISBN 978-981-13-9235-1

Bryant, C.R., Sarr, M.A., Délusca K. (2020) Agricultural Adaptation to Climate Change, Springer, ISBN 978-3-319-31392-4

Torquebiau, E. (2016) Climate Change and Agriculture Worldwide, Springer, ISBN 978-94-017-7462-8

Castro, P., Azul, A.M., Leal Filho, W., Azeiteiro, U.M. (2019) Climate Change-Resilient Agriculture and Agroforestry, Springer, ISBN 978-3-319-75004-0

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I25: Engineering software in agriculture and livestock farming**	6 C 4 WLH

Learning outcome, core skills: The participants will have gained computer programming skills in image processing, signal processing, machine learning in agriculture and livestock farming. They will also learn about the related software and application in the context.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Engineering software in agriculture and livestock farming (Exercise,Seminar) *Contents*: • Introduction to engineering solutions in agriculture and livestock farming • Advanced Machine vision for agricultural context • Advanced computer programming in MATLAB®software • Image and signal processing algorithms in MATLAB® • Machine learning algorithms • Training, validation and test set selection in machine learning models	4 WLH
Examination: Report (field work) 30% (max. 8 pages), practical exam 70% (software application) **Examination prerequisites:** attendance is compulsory **Examination requirements:** • Understanding of computer programming in MATLAB • Knowledge of image processing in agriculture and livestock farming • Ability of data analysis and classification • Ability to work and use optical sensors in agriculture and livestock farming	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of MATLAB, scientific research and data collecting
Language: English	**Person responsible for module:** Dr. Sowah Addo
Course frequency: each summer semesterWitzenhausen	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:

Papajorgji P. J. und P. Pardalos 2006: Software Engineering Techniques Applied to Agricultural System. Springer.

Gonzalez R. C., Woods R. E. and S. L. Eddins 2003: Digital Image Processing Using Matlab. Prentice-Hall, Inc., USA

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I27: Postharvest Technology**	6 C 4 WLH

Learning outcome, core skills: Students are able to understand Postharvest operations and can evaluate them in respect to loss reduction and quality aspects. They can select proper criteria for quality assurance and can decide fitting instrumentation for control purposes.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Postharvest Technology (Lecture) *Contents*: Basics of processing and storage of agricultural products (drying, cooling) Selection of machinery and process technology Quality assessment and respective instruments	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Students are able to critically select process technology, chose instrumentation for process control and quality assessment, and they are able to interpret the measurements	6 C

Admission requirements: Fundamentals of Physics	**Recommended previous knowledge:** Basic course in agricultural engineering
Language: English	**Person responsible for module:** Prof. Dr. Oliver Hensel
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:

Literature:

- Hand-outs in lectures and exercises

Wild, Y. and R. Scharnow, Container Handbook, Vol. 3, German Insurance Association – GDV, Berlin, 2003

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.I29M: Research Methods and Data Science in the Life Sciences**	6 C 4 WLH

Learning outcome, core skills: Students have an understanding of the methods of quantitative and qualitative data collection in the life sciences and the different sampling techniques and experimental designs. They are able to apply standard data analysis techniques. They understand the usefulness and limitations of selected multivariate approaches for regressions and pattern recognitions in the data science and learn the concepts of different machine learning approaches. They are able to apply the acquired skills in the analysis of their own MSc (and PhD) datasets.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Research Methods and Data Science in the Life Sciences (Internship,Lecture) *Contents*: Research methods and standard analyses in the life sciences • Introduction to methods of quantitative and qualitative data collection in the life sciences • introduction to sampling techniques and standard statistical techniques (regressions and analyses of variance) Data science in the life sciences • Application of multivariate approaches: principal component analysis (PCA) and regression (PCR), cluster analyses, factor analyses • Introduction to machine learning: perceptron, artificial neural networks, regression trees, rule-based models and support vector machine classification and regression	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Profound knowledge of existing research methods and standard analyses in the life sciences. Solid understanding of the concepts, usefulness and limitations of multivariate and machine learning approaches for data analyses in the life sciences.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic Knowledge (B.Sc. level) of Soil and Plant Sciences
Language: English	**Person responsible for module:** Prof. Dr. Bernard Ludwig
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 20	

Additional notes and regulations:

Literature:

Everitt, B., Hothorn, T. P. 2011. An Introduction to Applied Multivariate Analysis with R. Springer, New York

Jones, E., Harden, S., Crawley, M.J. 2023. The R Book. 3rded. Wiley

Holmes, D., Moody, P., Dine, D., Trueman, L. 2017. Research Methods for the Biosciences. Oxford University Press

Touchon, J.C. 2021. Applied Statistics With R: A Practical Guide for the Life Sciences. Oxford University Press

Wehrens, R. 2020. Chemometrics with R. 2nd ed. Springer

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P01: Ecology and agroecosystems**	6 C 4 WLH

Learning outcome, core skills: Students are able to define site-specific conditions of sustainability, identify key constraints to the productivity and sustainable use of agro-ecosystems, assess the scope of human (management) interventions, determine the causes of productivity decline and chose approaches to strengthen sustainability	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Ecology and agroecosystems (Lecture,Seminar) *Contents*: Case-study based analysis and discussion of ecological framework conditions (limitations) in different arid and sub-humid agro-ecosystems of tropical and temperate zones with a particular focus on marginal soils and/or difficult infrastructural conditions where effective nutrient cycling, integration of cropping and animal husbandry systems as well as the use of biodiversity for income generation at the farm level is of particular importance. The potential/role of organic agriculture will be discussed and a more general discussion of the potential of organic agriculture to strengthen the resilience of agro-ecosystems will be presented.	4 WLH
Examination: Written Exam (90 min., 70%) and presentation (25 min., 30%) **Examination requirements:** Students should be able to explain the function and biophysical limits of (sub)tropical agro-pastoral land use systems, to justify the need to establish interdisciplinary approaches and to describe current research methods in land use systems analysis.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in plant, soil and animal science, willingness to analyse agro-ecosystems quantitatively
Language: English	**Person responsible for module:** Prof. Dr. Andreas Bürkert
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations:

Literature:

Altieri, M. 1987: Agroecology: the scientific basis of alternative agriculture. Westview Press, Boulder, Colorado, USA; Gliessman, S.R. 1998: Agroecology: ecological processes in sustainable agriculture. Ann Arbor Press, Michigan, USA.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P05: Organic cropping systems under temperate and (sub)tropical conditions**	6 C 4 WLH

Learning outcome, core skills: Students are able to describe the principles and functions of agro-ecosystems, understand nutrient cycles and options for their improvement as an important basis of organic farming, evaluate systems of land use with a particular focus on organic modes of production and their role in agro-ecosystems, assess the role of livestock for nutrient cycling and with respect to the conservation of plant and animal biodiversity in (sub-)tropical settings.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Organic cropping systems under temperate and (sub)tropical conditions (Lecture,Excursion,Seminar) *Contents*: Visits of organic farms; case studies of livestock-oriented organic farming under different environmental conditions and constraints; development, evaluation and comparison of land use management systems under diverse natural, economic and socio-cultural conditions; nutrient cycling in plant-animal systems; site-specific contributions of legumes to N supply; P availability, P recycling and use of rock phosphates; modes of P supply in farming systems; EC, Australian, Japanese and North American regulations for organic farming – problems and opportunities.	4 WLH
Examination: Oral exam (ca. 15 minutes, 75%) and presentation (ca. 15 minutes, 25%) **Examination requirements:** Knowledge of organic plant cultivation systems, management of nutrient cycle systems, targeted use of legumes for site-specific N supply and knowledge of the basics of P availability, P recycling and the use of raw phosphates. Knowledge about the possibilities of P-supply in different cultivation systems, about the differences and problems with the ecostandards in EU, Japan, Australia and USA as well as knowledge about the contribution of livestock to the sustainability of organic farming systems.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in plant, soil and animal sciences
Language: English	**Person responsible for module:** Prof. Dr. Andreas Bürkert
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Altieri, M. 1987: Agroecology: the scientific basis of alternative agriculture. Westview Press, Boulder, Colorado, USA; Willer, H. et al. 2008: The World of Organic Agriculture - Statistics and Emerging Trends 2008, IFOAM, Bonn, Germany.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P07: Soil and plant science**	6 C 4 WLH

Learning outcome, core skills: Bridging module for students lacking basic knowledge in some agronomy disciplines. With the help of lectures and reading materials students will be enabled to fill in gaps and get updated on state-of-the art knowledge with a special focus on questions pertinent to organic agriculture. Students, having taken this module, will be able to follow advanced courses in the above fields.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Soil and plant science (Lecture,Seminar) *Contents*: Influence of soil formationprocesses on physical properties (texture, soil water, pore space), chemical properties (buffering, exchange capacity, nutrients), and biological properties (organic matter, edaphon), soil formation and classification. Nutrient availability and and nutrient mobilization under conventional and organic agricultural conditions. Major and minor nutrients and food quality.Plant breeding goals for different agricultural systems. Plant morphology, genetics and breeding: principles of plant domestication and use, characterization and evaluation, use of genetic resources in plant breeding, genetic basis for plant breeding Genetics of host-parasite interactions, epidemiology and plant defence. Insect physiology and ecology. Spezifische allgemeine und wissenschaftliche Artikel, die sich mit dem Zielland der Exkursion befassen werden über eine E-Learning Plattform zur Verfügung gestellt	4 WLH
Examination: Written exam (120 minutes) or oral exam (ca. 20 minutes) **Examination requirements:** Fundamentals of soil science: Physical properties (texture, soil water, pore space), chemical properties (buffering, exchange capacity, nutrients), biological properties (organic matter, edaphon), soil formation and classification. Plant nutrition: Role of major and minor elements in plants, nutrient availability and nutrient mobilisation, plant nutrients and food quality Plant breeding and genetics: plant morphology, genetics and breeding: principles of plant domestication and use, characterization and evaluation, use of genetic resources in plant breeding, genetic basis for plant breeding. Plant protection: principles of plant pathology and entomology, genetics of plant diseases, epidemiology, plant defence mechanisms; insect physiology and ecology	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Helmut Saucke
Course frequency:	**Duration:**

each winter semester; Witzenhausen	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Brady, N.C. 1990: The nature and properties of soils. 10th edition, Prentice Hall; Marschner, H. 1995: Mineral Nutrition of Higher Plants, Academic Press, New York; Sanchez, P. 1976: Properties and Management of Soils of the Tropics, Wiley, New York; van Wyk, B.E. 2005: Food Plants of the World. Briza Publication, Pretoria; Rehm, S., Espig, G. 1991: The Cultivated Plants of the Tropics and Subtropics. Verlag Josef Margraf, Weikersheim, Germany; Agrios, G.N. 2005: Plant Pathology, 5th edition, Academic Press, New York; Pedigo, L.P. 2002: Entomology and Pest Management, 4th edition, Macmillan Pub Co.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P13: Agrobiodiversity and plant genetic resources in the tropics**	6 C 4 WLH

Learning outcome, core skills: Students are able to understand the role of agrobiodiversity in tropical agro-ecosystems, to present approaches of functional biodiversity analysis and to discuss the needs and strategies of on-farm (in situ) and off-farm conservation of plant genetic resources.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Agrobiodiversity and plant genetic resources in the tropics (Lecture,Seminar) *Contents*: Case-study based analysis of the role of biodiversity for selected crops in different agro-ecosystems from the arid to the humid climate zones; importance of biodiversity for the stability / sustainability of smallholder (subsistence) versus commodity-oriented commercial agriculture in the Tropics, assessment and utilization of diversity, principles and practices in conservation of genetic resources, role of homegardens and indigenous wild fruit trees for in situ conservation of biodiversity, causes and consequences of genetic erosion, approaches of germplasm collection.	4 WLH
Examination: Oral exam (about 15 minutes, 60%) and presentation (about 20 minutes, 40%) **Examination requirements:** Students should be able to understand the role of agrobiodiversity in tropical agroecosystems, to present basic approaches to functionally analyse biodiversity and to discuss the need of and strategies for *in* and *ex situ* conservation of genetic resources.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in plant and soil sciences
Language: English	**Person responsible for module:** Prof. Dr. Gunter Backes
Course frequency: each winter semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Additional notes and regulations:

Literature:

Altieri, M. 1987: Agroecology: the scientific basis of alternative agriculture. Westview Press, Boulder, Colorado, USA; Eyzaguirre, P.B., Linares, O.F. 2004: Home gardens and agrobiodiversity. Smithsonia

Books, Washington, USA; Wood, D., Lenne, J.M. 1999: Agrobiodiversity: Characterization, utilization and management. CABI Publishing, Wallingford, UK.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P21: Energetic use of agricultural crops and Field forage production**	6 C 4 WLH

Learning outcome, core skills: Based on the data presented, students are able to identify and evaluate potentials and limits of energy production from renewable plant resources. Furthermore, students are able to classify and to assess the importance of field forage production for organic cropping systems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Energetic use of agricultural crops and Field forage production (Lecture,Excursion) *Contents*: Management of agricultural crops for energetic use. Energy scenario and potentials, emission of greenhouse gases, sources of energy from biomass and waste material, selecting and processing biomass as a fuel. Biogas, fermentation process and plant technology. Gasification,pyrolysis, combustion. Benefits and restrictions with the replacement of fossil fuel-based materials through biomass-based products. The importance of field forage production (ffp) for organic cropping systems; basics of ffp – plant species; integration of ffp in crop rotation systems; environmental impact of ffp, quality aspects; nutrient-dynamics. Environmental evaluation by lifecycle assessment analysis.	4 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Basic and theme specific deepened knowledge on the use of agricultural biomass for energetic purposes and for forage production.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowlege in soil and plant sciences, physics and chemistry.
Language: English	**Person responsible for module:** Prof. Dr. Michael Wachendorf
Course frequency: every 4th semester; Start WiSe 2017/2018; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
Literature:

Guide to Biogas - From production to use. 2012. Fachagentur Nachwachsende Rohstoffe e. V. (FNR)

Kaltschmitt, M. Energy from Organic Materials (Biomass). Springer, New York, NY. https://doi.org/10.1007/978-1-4939-7813-7.

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P22: Management of tropical plant production systems**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Knowledge of botanical, ecological and agronomic facts of presented crops and cropping systems. The students should be able to classify crops and cropping systems in relation to site conditions and undertake system-orientated evaluation of sustainable production.	Attendance time: 60 h Self-study time: 120 h

Course: Management of tropical plant production systems (Lecture) *Contents*: Presentation of the most important crops with respect to: botany, morphology, origin, climatic and ecological requirements, crop production, harvest procedure, significance in local farming systems, utilisation as food, feed, raw materials and as bioenergy source. Discussion of specific cropping systems in the tropics and subtropics and specific management systems for the sustainable improvement of productivity. **Literatur** Rehm, S., Espig, G. 1991: The Cultivated Plants of the Tropics and Subtropics. Verlag Josef Margraf. Weikersheim, Germany; lecture notes	4 WLH
Examination: Presentation (ca. 30 Minuten, 50%) und written report (max. 15 pages, 50%) **Examination requirements:** Knowledge of botanical, ecological and agronomic facts of the presented crops and cropping systems. Knowledge of the assignment of crops and cropping systems to different site conditions, as well as system-oriented evaluation of sustainable production at selected sites.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge on plant production (BSc-level)
Language: English	**Person responsible for module:** Prof. Dr. Reimund Paul Rötter
Course frequency: each winter semester; Göttingen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Additional notes and regulations:
Literature:

Literatur, u.a.: Rehm, S., Espig, G. 1991: The Cultivated Plants of the Tropics and Subtropics. Verlag Josef Margraf. Weikersheim, Germany; lecture notes

Slides, selected articles and other materials will be provided

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P27M: Nutrient dynamics, experimental design and statistical modelling - bilingual**	6 C

Learning outcome, core skills: Students understand the advantages and disadvantages of different experimental designs in agricultural experiments. For each design, they are able to carry out correct data analyses using combined regression and analysis of variance or linear mixed effects models in R. Based on their understanding of soil nutrient dynamics and experimental designs they are able to evaluate and critically assess the significance of field and laboratory experiments for studying C, N and P dynamics and to consider all influencing variables.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Nutrient dynamics: long-term experiments and modelling - bilingual (Lecture,Exercise) *Contents*: • Description of the dynamics of C, N and P (forms, transformations and availability) in arable soils • Experimental designs in agricultural experiments: completely randomized design, randomized complete block design, Latin square design, split-plot design and balanced incomplete block design • Statistical modelling: combined regression and analysis of variance and linear mixed effects models Modelling of the turnover of soil organic matter using the SoilR package in R • Application of the statistical software R for a description of C and N dynamics Crawley M.J. 2012: The R book. 2nd edition, Wiley Everitt B., Hothorn T. P. 2011: An Introduction to Applied Multivariate Analysis with R. Springer, New York Welham S.J., Gezan S.A., Clark S.J., Mead A. 2014: Statistical Methods in Biology. Design and Analysis of Experiments and Regression, CRC Press, Boca Raton Glaz B., Yeater K.M. 2020: Applied Statistics in Agricultural, Biological, and Environmental Sciences. John Wiley & Sons	
Examination: Oral examination (approx. 25 minutes)	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Bernd Ludwig
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Universität Kassel/Witzenhausen** **Module M.SIA.P30M: Ecological Genetics**	6 C 4 WLH

Learning outcome, core skills: Students will get an understanding of the role of intraspecific (genetic) variation in managed and unmanaged ecosystems with a main focus on tropical ecosystems. They will be acquainted with the analysis of the dynamics of genetic diversity in space and time. They will be conscious of the role of genetic diversity for adaptation to changing environmental conditions including changes of land use and climate change, and they will understand methods to conserve plant genetic resources.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Ecological Genetics (Lecture,Exercise,Seminar) *Contents*: Fundamentals of genetics: inheritance, DNA structure and function. Evolution and evolutionary factors: Mutation, migration, drift, selection. Evolutionary adaptations. Population structure, measurement of genetic diversity within and among populations. Genetic diversity management in plant breeding. Human impacts on genetic diversity: breeding, land use change and global climate change. Conservation of plant genetic resources. Case studies: Genetic diversity patterns of tropical plants.	4 WLH
Examination: Oral presentation 40% (approx. 30 minutes) and oral examination 60% (approx. 60 minutes) **Examination requirements:** Students prove that they have a sound understanding of • The role of intraspecific diversity in natural and managed ecosystems • Evolutionary factors shaping genetic diversity patterns • The temporal and spatial dynamics of genetic variation • Evolutionary adaptations to changing environmental conditions • Human impacts on genetic diversity • Conservation strategies for plant genetic resources	6 C

Admission requirements: none	**Recommended previous knowledge:** Basics of molecular and general genetics
Language: English	**Person responsible for module:** Prof. Dr. Reiner Finkeldey
Course frequency: each summer semester; Witzenhausen	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 100	

Additional notes and regulations:

Literature:

Finkeldey, R. and H.H. Hattemer (2007) Tropical Forest Genetics. Springer, Berlin, Heidelberg, New York. 315 pages.

Other literature will be introduced during the course.

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0004: Financial Risk Management**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand and explain how risk management is related to other issues in corporate finance, • critically assess different motivations for corporate risk management, • understand and critically assess different risk measures and how they are applied in practice, • understand and explain how international risks can be managed and how the management of international risks is related to various economic parity conditions, • understand, analyze and critically apply measures and methods to manage interest rate risk, • understand, analyze and critically apply measures and methods to manage credit risk, • understand, analyze and critically apply hedging strategies for commodity price risk.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Financial Risk Management (Lecture) *Contents*: 1. Introduction 2. Risk Management: Motivation and Strategies 3. Managing Interest Rate Risk 4. Managing Credit Risk 5. Managing International Risks 6. Managing Commodity Price Risk Parts of the material covered by the lectures will be transmitted via recordings that students have to work through on their own. Parts of the contact hours during lectures will be used by the students to discuss open issues and to work on specific cases and applications of the main concepts.	2 WLH
Course: Financial Risk Management (Tutorial) *Contents*: In the accompanying practice sessions students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: • Demonstrate a profound knowledge of how risk management is related to other issues in corporate finance, • document an understanding of viable reasons for corporate risk management and how corporate risk management can create value, • demonstrate the ability to analyze and apply different risk measures,	

• show a profound understanding of methods and techniques used to manage international risks, interest rate risk, credit risk, and commodity price risk.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0001 Sustainable Finance
Language: English	**Person responsible for module:** Prof. Dr. Olaf Korn
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0018: Financial Statement Analysis**	6 C 4 WLH

Learning outcome, core skills: After successfully participating in this course, students are able to: • explain fundamental concepts of financial statement analysis and the general structure of financial statements, • understand how the environment and the company's strategy can shape financial statements, • apply different analysis tools like business strategy analysis, accounting analysis, financial analysis, and prospective analysis, • standardise, adjust, and analyse financial statements, • asses pros and cons of different valuation concepts and the implications for firm valuation, • develop a critical perspective on the reporting and evaluation of companies.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Financial Statement Analysis (Lecture) *Contents*: Financial statements provide data on public corporations' economic activities and are the basis for a wide range of business analyses. This course presents different analysis tools using financial statements like business strategy analysis, accounting analysis, financial analysis, prospective analysis, and debt security analysis. Using these tools, students learn (1) how to generate performance expectations through industry analysis and competitive strategy analysis; (2) how to evaluate accounting quality by assessing accounting policies and estimates; (3) how to analyze performance using ratios and cash flow analysis; (4) how to make forecasts and value firms; (5) how to assess the creditworthiness of a company.	2 WLH
Course: Financial Statement Analysis (Exercise) *Contents*: In the exercise, students practice the different analysis tools with exercises and apply the analyses to small case studies.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: Students are expected to be familiar with the concepts of financial statement analysis, firm valuation, and credit analysis. Additionally, they are able to apply that knowledge to real-world cases.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0002 IFRS Financial Reporting
Language:	**Person responsible for module:**

English	Prof. Dr. Vanessa Flagmeier
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0020: Risk Management and Solvency**	6 C 2 WLH

Learning outcome, core skills: • Knowledge and understanding of the functions and elements of a risk management system, of the risk potentials and its valuation of an insurance company, • knowledge of the legal requirements regarding risk management and solvency, especially Solvency II, • knowledge of the relevant techniques used in risk management of an insurance company (stress tests, ALM, Embedded Value, actuarial analysis, Value Based Management), • understanding of the relevant methods used in the balance sheet of an insurance company (HGB, IFRS, solvency balance sheet), • ability to develop simple task settings independently with regard to risk management and solvency.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Risk Management and Solvency (Lecture) *Contents*: • Role and components of a risk management system • Legal requirements: MaRisk, stress tests, actuarial reporting, market consistent valuation (IFRS) • Solvency requirements (Solvency I, Solvency II) • Value Based Management, Embedded Value, Asset Liability Management (ALM)	2 WLH
Examination: Written examination (120 minutes)	6 C

Examination requirements: • Document a knowledge and understanding of the functions and instruments of risk management and of the valuation of risk potentials, • demonstrate a knowledge and understanding of quantitative and qualitative requirements of the solvency regime, • demonstrate a knowledge and understanding of market consistent valuation within solvency, HGB,IFRS, • demonstrate the ability for simple calculations with regard to risk management and solvency.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Martin Balleer
Course frequency: every second semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0075: Pricing Strategy**	6 C 4 WLH

Learning outcome, core skills: After successful attendance the students should be able to implement the most important determinants of pricing policy and pricing management, as well as to apply selected marketing techniques, marketing strategies, psychological and economic theories for the analysis of optimal pricing strategies. Further, the students learn to investigate the pricing strategy from a B2B and B2C perspective, completed on case studies and caselets.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Pricing Strategy (Lecture) *Contents*: • Introduction to Pricing Strategy • Value Creation & Value Communication • Market Segmentation and Pricing Structure • Price Customization • Behavioral Pricing • Pricing Policy and Price Level • Cost and Financial Analysis • Competition • Pricing Research • Miscellaneous Selected Topics from Pricing Strategy	2 WLH
Course: Pricing Strategy (Exercise) *Contents*: In the accompanying practice sessions students deepen and broaden their knowledge from the lecture by applying theories and methods to real-world problem sets. This is achieved by case studies that focus on the specific contents of the lecture. In the tutorial the case studies are interpreted and potential solutions are discussed. The tutorial is supplemented by reviewing fundamental concepts from the lecture.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: Pricing Tactics, Pricing Strategies, Determining the Economic Value of Products, Pricing Structures, Pricing Procedures, Financial Analysis, Pricing Competition	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Yasemin Boztug
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0100: International Management**	6 C 2 WLH

Learning outcome, core skills: Upon successful completion of this course, students will be able to: • demonstrate a profound knowledge of theories and concepts of international management, • identify and define options of actions and strategies for internationalization and international activities of organizations, • understand and apply tools and measures important for the international activity of organizations, • critically discuss these theoretical approaches, concepts and tools.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: International Management (Lecture) *Contents*: The lecture offers an introduction to theories and concepts of international management with a strong connection to practical examples and case studies. Topics include various aspects of internationalization and international organizations, such as drivers of internationalization, market entry strategies, the role of heterogeneous national contexts, and relationships with partner firms across borders.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: Students… • demonstrate a profound knowledge of theories and concepts in the field of international management, • show a thorough understanding of how to make use of internationalization strategies and tools, • demonstrate the ability to apply theoretical concepts to practical examples and case studies, • demonstrate the ability to discuss concepts and approaches of international management.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in the areas of management and organization
Language: English	**Person responsible for module:** Dr. Clarissa Weber
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0105: International Company Taxation**	6 C 4 WLH

Learning outcome, core skills: Having attended this lecture series the students: • know about the tax consequences multinational companies in various legal forms are exposed to, especially with regard to international double taxation, • know the methods to avoid international double taxation and are competent in using these methods as well as in analysing their economic impact, • know the basic forms of international business activities, • know about the necessity of profit attribution to the constituent parts of a multinational enterprise, and • are in the position to analyse specific circumstances with regard to their tax-related consequences.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: International Company Taxation (Lecture) *Contents*: It is the aim of this lecture series to provide knowledge about the institutional fundamentals of international company taxation. To this end, the lecture series deals in particular with the problem of international double taxation as well as with the contradictory problem of international double non-taxation. Afterwards, possible mechanisms of relief will be discussed. In this context, the main focus is on the role of bilateral tax treaties and relevant EU-law. Furthermore, the lecture series analyses the taxation of cross-border investments and, related thereto, the necessity of attributing profit to the constituent parts of a multinational enterprise. The lecture series concludes with discussing options for international tax planning.	2 WLH
Course: International Company Taxation (Exercise) *Contents*: In the course of the exercise series, the students will deepen, complete and extend their knowledge and skills acquired in the lecture series. In particular, some exercises will be presented to, and solved with, the students, to provide them with the opportunity to apply this knowledge. These exercises will include calculations, reasoned statements and critical analysis.	2 WLH
Examination: Written examination (90 minutes) (6 C) or written examination (60 minutes) (4 C) plus successful completion of a case study, conducted in small teams (2 C)	6 C

Examination requirements: In order to accomplish this course successfully, students are expected to be familiar with the tax consequences of multinational companies depending on their legal forms. Further, the students should show knowledge of mechanisms providing relief from double taxation and to avoid double non-taxation, international tax planning strategies, and how these strategies should be applied under specific circumstances. In addition, the areas of international action to counter harmful tax practices and proposals for	

reform of the international tax system are covered and form part of the examination. This knowledge should be shown by means of calculations, reasoned statements and critical analysis.	

Admission requirements: none	**Recommended previous knowledge:** B.WIWI-BWL.0001 Company Taxes I or M.WIWI-BWL.0003 Company Taxation
Language: English	**Person responsible for module:** N. N.
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0109: International Human Resource Management**	6 C 3 WLH

Learning outcome, core skills: After taking this module, students will have gained theoretical knowledge of Human Resource Management (HRM) in an international context, as well as practical knowledge and skills to prepare them for a future career in the HR department and/ or management of international companies. Furthermore, the course fosters cross-cultural competence by analyzing the impact of national context and culture on HRM and enables the students to analyze, plan, deliver, and evaluate measures of international HRM.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: International Human Resource Management (Lecture) *Contents*: Lectures will introduce relevant theories, basic cultural concepts, and strategic relevance of HRM in an international context. Key functions of international HRM will be discussed (e.g. global HR planning, international staffing & recruiting, training & development, expatriate management, etc.).	2 WLH
Course: International Human Resource Management (Tutorial) *Contents*: Tutorials will help students to discuss and transfer knowledge between theory and practice, using case studies and examples.	1 WLH
Examination: Written examination (60 minutes) **Examination requirements:** • Demonstration of profound knowledge of the various theoretical approaches, functions and measures of international HRM. • Demonstration of cross-cultural competence and understanding of context and culture on HRM issues. • Demonstration of understanding of strategies and current challenges of multinational firms and international HRM and ability to transfer theoretical knowledge in order to solve them.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: every winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0110: Strategic Human Resource Development**	6 C 2 WLH

Learning outcome, core skills: Students will understand the relationship between strategy and human resource development and the different models as well as tasks and phases of human resource development. By using an innovative approach the students will be enabled to plan and evaluate measures of human resource development in practice. In the past we have covered e.g.: • strategic approaches to human resource development, • didactics and methods of training, • competency management, • qualitative and quantitative analysis of training needs and diagnostics, • forms of human resource development, • ensuring Transfer, • Quality management and controlling, • Case: Design of a development measure, • Leadership Development, • Talent management, • Coaching/ Mentoring, • development of (leadership-)teams. • Organizational development.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Strategic Human Resource Development (Seminar) *Contents*: To achieve strategic goals companies need to recruit, retain and develop the right employees. In this regard the seminar focuses on strategic human resource development as one important driver of successful strategy implementation. The seminar provides an overview of the objectives, phases and measures of personnel and leadership development and introduces the students to different methods of training. The seminar is praxis-oriented and fosters individual application and transfer. It has a significant practical element as students will carry out their own training designs and present them to the class. Therefore, in the beginning, basics of human resource development will be covered by the lecturer and an overview of training methods will be given. Building on this, groups of students will present their own topic.	2 WLH
Examination: Presentation (approx. 60 minutes) and written elaboration (max. 20 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: To pass the course students have to write a seminar paper and give a presentation. They have to prove, that they are able to systematically apply their knowledge of training design. Attendance is mandatory.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of Human Resource Management
Language: English	**Person responsible for module:** Prof. Anna Katharina Bader
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0112: Corporate Development**	6 C 4 WLH

Learning outcome, core skills: After successful completion of this course, students are able to: • demonstrate a profound knowledge of different perspectives and drivers of corporate development, • identify and define options of actions and strategies for the growth of companies and the conditions necessary to obtain success, • identify and define options of actions and strategies for the reduction of company size and the conditions necessary to obtain success, • apply and critically discuss the tools, strategies, and concepts that have been acquired in order to analyze as well as to tackle case studies, • deal with the ambiguity of real situations and make reasonable decisions.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Corporate Development (Lecture) *Contents*: a) Introduction to corporate development • Definition and practical relevance of ”Corporate Development” b) Tracks and drivers of corporate development processes • In which different tracks do companies develop over time and why? • Models and theories about patterns of change • Measures and mechanisms to manage corporate development and to ensure sustainable success • Models on driving forces of corporate development • Empirical studies discussing tracks and drivers of corporate development processes c) Growing company size • Strategies of corporate development, direction of growth and shifting boundaries of companies • Cooperation and M&A as different growth strategies • Potentials and challenges of different growth strategies d) Reducing company size • When and how do companies reduce their size and how can they do so successfully? • Outsourcing and Downsizing as different strategies to reduce company size • Potentials and challenges of different strategies to reduce company size	2 WLH
Course: Corporate Development (Exercise) *Contents*: In the accompanying practice sessions, students deepen and broaden their knowledge from lectures by applying theories and methods to real-world problem sets.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: Students: • demonstrate a profound knowledge of and ability to manage challenges in corporate development, • document a thorough understanding of how to actively design an organizations' development processes, • demonstrate the ability to discuss different measures, strategies, and tools to manage corporate development, • show a profound understanding of empirical studies and theoretical implications and be able to transfer findings on current practical examples in case studies.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in the areas of management and organization as well as organizational design and change
Language: English	**Person responsible for module:** Prof. Dr. Indre Maurer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0115: Human Resource Management Seminar**	6 C 2 WLH

Learning outcome, core skills: After the seminar students have learned to approach a current human resource management (HRM) topic from a scientific perspective and write an academic paper. They will have acquired relevant and up to date knowledge in their field and are able to apply qualitative or quantitative research methods. Students will have improved their communication and presentation skills while discussing the work of their peers and presenting their own research project. This seminar will further prepare students to write a master thesis.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Human Resource Management Seminar (Seminar) *Contents*: In this seminar, students work on a current HRM topic. Students can select among different topics regarding HRM and are supposed to prepare a research paper. During the sessions, they will learn how to write an academic paper including the abstract and introduction, theory and hypotheses development as well as methods, results, and discussion sections.	2 WLH
Examination: Presentation (approx. 30 minutes) and term paper (max. 7000 words) **Examination prerequisites:** Regular attendance **Examination requirements:** • Demonstration of a profound knowledge of theory and literature regarding a current topic in HRM and ability to develop theoretical and practical implications. • Demonstration of overall understanding of the scientific approach, methods, and standards and ability to write/ present an academic paper.	6 C

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0109 International Human Resource Management M.WIWI-BWL.0118 Survey Research
Language: English, German	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0118: Survey Research**	6 C 2 WLH

Learning outcome, core skills: After successful participation in the seminar, students have acquired in-depth knowledge of the whole process of a survey research project, including survey design, implementation, and statistical analyses. Further, students are knowledgeable of the theoretical foundations as well as practical application of statistical methods, including ANOVA, simple regression, multiple regression, and moderated/ mediated regression. This enables students to conduct and analyze survey results by using statistical software, such as R. In addition, students can conduct empirical research projects, e.g. as part of a master thesis, according to scientific standards.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Survey Research (Seminar) *Contents*: Seminar, including lectures of statistics/ survey methodology theory, guided practical work using statistical computer programs, moving from simpler statistical analyses, to more complex. After this, students decide on a statistical model, and then build an empirical paper, in the style used in established management journals.	2 WLH
Examination: Presentation (approx. 15 minutes) with written elaboration (max. 7000 words) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: • Demonstration of an in-depth knowledge of how to conduct a scientific research project. • Demonstration of an advanced understanding and the ability to apply scientific research standards and methods. • Demonstration of an in-depth knowledge of survey design and implementation as well as the ability to collect, analyze, and systematically interpret quantitative data.	

Admission requirements: none	**Recommended previous knowledge:** Basic statistical and R programming knowledge
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: every winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0122: Cross-Cultural Management**	6 C 2 WLH

Learning outcome, core skills: Cross-Cultural Management is an interdisciplinary field of study, which aims to improve communication, management and interaction of people from different cultures. After taking this lecture, students will be familiar with and have acquired several key competencies and methods needed when working with/in different cultures. They will be aware of cultural differences in communication and management, enabling them to more easily and more naturally fit into an international business environment. Additionally, students will be able to learn concepts related to organizational workflow including project planning and project communication as well as further develop international and virtual collaboration competencies, problem-solving skills, and interest in cross-cultural interactions. Through accompanying project work, students learn to efficiently work together with diverse team members from different cultural backgrounds while enhancing their own cultural intelligence and configure, structure and write a business proposal.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Cross-Cultural Management (Lecture and project work) *Contents*: Through increased globalization of the economy, cross-border ventures, global relocations and the increased use of e-commerce, many businesses are finding that managing cultural differences can be a key factor in realizing their objectives. Lectures and project work will introduce students to the topic of cross-cultural management and raise awareness of cultural differences in international management. Through project work, the course also provides students with experience in global project management, managing cross-cultural teams, and working together in a global virtual environment. Working in cross-cultural teams for several weeks, students develop a business proposal.	2 WLH
Examination: Written examination (60 minutes) **Examination requirements:** • Questions and case studies based on lecture content, • demonstration of knowledge of the various characteristics, methods and problems in cross-cultural management, • ability to reproduce and reflect on strategies used by firms and managers to deal with, and respond to cross-cultural differences.	3 C
Examination: Project documentation (approx. 20 pages) **Examination requirements:** • Submission of a business proposal based on project team work presenting solutions for real international business challenges, • demonstration of the ability to work systematically on a global virtual team, • demonstration of cultural competence and cross-cultural working abilities.	3 C

Admission requirements:	**Recommended previous knowledge:**

none	none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0123: Tax Transfer Pricing**	6 C 2 WLH

Learning outcome, core skills: Having attended this lecture the students: • know the basic fundamentals of international tax transfer pricing including the legal basis for adjusting income, • are familiar with the OECD transfer pricing guidelines and selected German equivalents, as well as relevant domestic and international court cases, • know the methods to determine transfer prices, • know possibilities and limitations of profit shifting via transfer pricing, • gain an insight into the extent of profit shifting via transfer pricing by examining relevant empirical literature, • are competent in using different methods of calculating transfer prices for tax purposes, • are in a position to assess the appropriateness of transfer pricing mechanisms and to apply transfer pricing methods.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Tax Transfer Pricing (Lecture) *Contents*: The lecture series gives an overview of the fundamentals of transfer pricing. It is the aim of the series that students gain understanding of the economic principles and regulatory background to international tax transfer pricing taking into account the allocation of functions, assets and risks among affiliated companies. Students also learn about the opportunities and limitations of tax planning via transfer pricing. Furthermore, the series provides insights into empirical and experimental studies dealing with profit shifting via transfer pricing.	2 WLH
Examination: Oral examination (approx. 30 minutes)	6 C

Examination requirements: Evidence of knowledge on regulatory framework conditions concerning tax transfer pricing, including the methods for determination of international tax transfer prices, the legal basis for adjusting income, the OECD transfer pricing guidelines and selected German equivalents as well as relevant domestic and international court cases. Further, students are required to provide evidence of knowledge on tax planning based on transfer pricing and limitations to profit shifting via transfer pricing.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0105 International Company Taxation
Language: English	**Person responsible for module:** N. N.
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0129: International Management Research Seminar**	6 C 2 WLH

Learning outcome, core skills: In this research seminar, the Master students should work independently and systematically on a research question. The participants can choose one of the current themes from the area of "International Management" or choose their own research topic from a related field. After taking this module, the participants should have improved their communication and presentation skills. Furthermore, students will better understand the research process that can serve as a guide for producing scholarly output (e.g., a Master's thesis or a journal article) after participating in this class. Students will have gained valuable knowledge and skills that should prepare them for writing their own thesis.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: International Management Research Seminar (Seminar) *Contents*: In this research seminar, the Master students should work independently and systematically on a research question. The participants can choose one of the current themes from the area of "International Management" or choose their own research topic from a related field.	2 WLH
Examination: Presentation (ca. 30 minutes) with written elaboration (max. 8.000 words) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: • Demonstration of overall understanding of scientific methodologies and research processes. • Demonstration of in-depth knowledge regarding the "International Management" research and development and of theoretical and practical implications obtained from your own research project.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0091 Organizational Behavior M.WIWI-BWL.0109 International Human Resource Management
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: every second semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0133: Banking Supervision**	6 C 2 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand and explain how banking supervision has developed over time and how it differs across jurisdictions, • understand, explain and critically apply standard measures and methods of banking supervision, • understand and explain the Euro area banking union, • understand, explain and critically apply key concepts in banking regulation, • understand, explain and critically apply key measures and methods to assess the risks of financial institutions, • understand and explain micro-and macroprudential supervision and their differences.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Banking Supervision (Lecture) *Contents*: 1. Introduction (e.g. banking structure) 2. Foundations of banking supervision • Historical developments • Comparison across different jurisdictions 3. Banking Union – SSM 4. Banking Regulation • Basel III, CRDIV/CRR • ASFR model by Gordy • Further requirements on banks 5. SSM Guide on banking supervision • How is banking supervision applied? 6. Risk Analysis • Stress testing • Bank Rating 7. Microprudential versus macroprudential supervision	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Document an understanding how banking supervision has developed over time and how it differs across jurisdictions • Demonstrate a profound knowledge of standard measures and methods of banking supervision • Show an understanding of the Euro area banking union • Demonstrate the ability to explain and to some extent to apply key concepts in banking regulation	

• Document the knowledge to apply key measures and methods to assess the risks of financial institutions and to interpret the obtained results appropriately • Document an understanding of micro-and macroprudential supervision and their differences	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0001 Sustainable Finance M.WIWI-BWL.0004 Financial Risk Management
Language: English	**Person responsible for module:** Dr. Philipp Koziol
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0134: Panel Data Analysis in Marketing**	6 C 2 WLH

Learning outcome, core skills: Panel data refers to observations from different individuals or units (consumers, stores, products, etc.) over several time periods (days, weeks, months, etc.). After successful attendance the students will understand the methodological principles of panel data analysis, especially in the context of consumer behavior and marketing-mix models. Further, they will be able to conduct own panel data analyses using the statistical programming language R.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Panel Data Analysis in Marketing (Lecture with exercise) *Contents*: • Introduction to R • Refreshment in Regression Analysis • Fixed Effects Models in Marketing • Random Effects Models in Marketing • Dynamic Panel Models in Marketing	2 WLH
Examination: Term Paper (max. 6000 words)	6 C

Examination requirements: A self-conducted empirical project. Students will be provided with empirical data, but are welcome to analyze own projects. Students are advised to use the statistical programming language R, but can be allowed to use different statistics software in exceptional cases. Theoretical, methodological and empirical elaboration of a selected topic in panel data analysis with focus on consumer behavior and/or marketing-mix modeling.	

Admission requirements: none	**Recommended previous knowledge:** Basics in Hypothesis testing & Regression analysis Previous knowledge in R is not required
Language: English	**Person responsible for module:** Ossama Elshiewy
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0136: Digital Transformation**	6 C 2 WLH

Learning outcome, core skills: This course aims to develop a cross-functional and managerial understanding of digital transformation of business. Specifically, participants will be able after this course to make decisions related to the idea of leveraging digital resources for differential value creation. Participants will learn how to evaluate and assess the impact of digital technologies in the firm's environment, including customers, competitors, and broader communities. In addition, participants will be able to create strategies and approaches that are needed to prepare an organization for competing in the digital world. In sum, after taking this course, students will be able to know the foundations of how to manage the digital transformation inside an incumbent firm.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Digital Transformation (Lecture) *Contents*: Until recently, the knowledge of Information Technology (IT) and its application in the enterprise had been confined to the IT Department, requiring top management to take very concrete decisions from time to time. Not anymore. Today – in the digital age – successful business managers understand "digital", anticipate its impact on business, and leverage that insight for building digital competencies across the entire organization. The digital age is fueled by the drastic reduction in the cost of processing, storage, and communication, creating a high-density digital environment. During the last years, we have witnessed the "consumerization" of digital technologies, that is, the scope and impact of these technologies now transcends the application domain of enterprises to include large parts of society. Technology today is both available and affordable. This creates a new phenomenon where individuals incorporate cutting-edge digital technologies in their personal lives before businesses get a chance to adopt and implement them. In a way, this leads to a new kind of digital divide –that between society and business. Customers and employees of the younger generation come with new expectations that companies are not prepared to meet. To address this challenge, today's business leaders must be able to think digital. Thinking digital does not equal thinking IT. Digital focuses much less on process automation, transactions, and efficiency, and much more on creating new value-added experiences and interactions with customers, employees, and business partners. Ultimately, it enables the firm to generate new revenue by finding unique ways to combine its physical and digital resources.	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Regular and active course attendance and participation.	6 C

Examination requirements: In order to accomplish successfully this course, students are expected to document an understanding of: • Main digital drivers and their impact on society/business	

- Digital capabilities needed to face potential digital disruptions
- Concepts and frameworks of digital transformation initiatives
- Managerial capabilities needed to address digital transformation initiatives

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in firms and markets and information and communication systems
Language: English	**Person responsible for module:** Prof. Dr. Robert Wayne Gregory
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 30	

Additional notes and regulations:
Limitation of the "lecture" due to the case studies.

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0139: Discrete Choice Modeling**	6 C 2 WLH

Learning outcome, core skills: Discrete choice modeling deals with analyzing choice behavior of individuals (consumers, firms, etc.) as a function of variables that describe the choice alternatives and/or the individuals. After successful attendance the students will understand the methodological principles of discrete choice modeling. Further, they will be able to estimate own discrete choice models using the statistical programming language R.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Discrete Choice Modeling (Lecture with integrated exercises) *Contents*: - Brief introduction to R - Random Utility Theory - Collecting Choice Data • Choice-based Conjoint • Consumer Purchase Data - Analyzing Choice Data • Multinomial Logit (MNL) Models • Generalized Extreme Value Models • Finite Mixture and Mixed MNL Models • Hierarchical Bayesian MNL Models	2 WLH
Examination: Term Paper (max. 6000 words)	6 C

Examination requirements: A self-conducted empirical project. Students will be provided with empirical data, but are welcome to analyze own projects. Students are advised to use the statistical programming language R, but can be allowed to use different statistics software in exceptional cases. Theoretical, methodological and empirical elaboration of a selected topic in discrete choice modeling.	

Admission requirements: none	**Recommended previous knowledge:** Probability theory and distributions, Hypothesis testing, (Logistic) Regression analysis Previous knowledge in R is not required
Language: English	**Person responsible for module:** Prof. Dr. Yasemin Boztug
Course frequency: each winter semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0142: Publishing in Management Journals**	6 C 2 WLH

Learning outcome, core skills: After attending the seminar, students have acquired the ability to critically evaluate prior research. This also includes an increased knowledge on qualitative and quantitative research methodologies by critically reflecting and discussing the strengths and weaknesses of exemplary publications. Furthermore, students have obtained the ability to write an academic paper in English that adheres to the guidelines of scholarly writing and publishing in the area of management.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Publishing in Management Journals (Seminar) *Contents*: Students will develop a manuscript that has the potential to be publishable in scholarly journals. Discussing and learning from talks and experiences of international scholars and editors, peer-reviewed scholarly papers and other students' work-in-progress manuscripts will be the primary format of this course. Preparing assigned reading material and working on your own paper are thus of the utmost importance.	2 WLH
Examination: Presentation (ca. 30 minutes) with written elaboration (max. 7000 words) **Examination prerequisites:** Regular active attendance.	6 C

Examination requirements: • Demonstration of advanced understanding of the scientific approach in terms of methodology and research processes, • demonstrate the ability to critically reflect on academic articles published in scholarly journals, • demonstrate the ability to develop a scholarly article by integrating theory with research methods and deriving theoretical and practical implications from the results.	

Admission requirements: none	**Recommended previous knowledge:** Methodological knowledge, obtained through courses such as M.WIWI-BWL.0118 Survey Research, and knowledge in special topics, e.g. M.WIWI-BWL.0109 International Human Resource Management
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students:	

15	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0146: Doing Business in Japan**	3 C 1 WLH

Learning outcome, core skills: After attending this lecture, students have obtained background knowledge on the economic, political, and cultural environment that influence the business in Japan. In addition, students will obtain insights into successfully doing business in Japan. This course will prepare students for doing business in Japan.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Doing Business in Japan (Lecture) *Contents*: The lecture will introduce the economic, political, and cultural environment that influence business in Japan. Through a mixture of lectures, case studies, and discussions, students will study how foreign companies and managers do business in Japan. The contents will include market entry, marketing, and human resource management.	1 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: • Demonstration of knowledge in doing business in Japan, • demonstration of the ability to apply theoretical knowledge to practical business challenges in Japan.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0147: Doing Business in Korea**	3 C 1 WLH

Learning outcome, core skills: After attending this lecture, students have obtained background knowledge on the economic, political, and cultural environment that influence the business in Korea. In addition, students will obtain insights into successfully doing business in Korea. This course will prepare students for doing business in Korea.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Doing Business in Korea (Lecture) *Contents*: The lecture will introduce the economic, political, and cultural environment that influence business in Korea. Through a mixture of lectures, case studies, and discussions, students will study how foreign companies and managers do business in Korea. The contents will include market entry, marketing, and human resource management.	1 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: • Demonstration of knowledge in doing business in Korea, • demonstration of the ability to apply theoretical knowledge to practical business challenges in Korea.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0153: Digital Marketing**	6 C 2 WLH

Learning outcome, core skills: After successfully completing this course, the students: • know core topics involved in the effective management of digital Marketing strategies, tactics, • know how to create a digital marketing strategy by analyzing the digital landscape, • know how to transform marketing strategies into digital marketing objectives and tactics, • know how to plan the implementation of strategies and tactics using state of the art digital marketing instruments: 1. digital outbound marketing (reaching out to and targeting consumers; e.g., display advertising) 2. digital inbound marketing (ensuring that consumers can find information about brands; e.g., search engine optimization), 3. social media marketing (motivating consumers to create and disseminate brand-related social media content; e.g., content marketing), 4. mobile marketing (connecting with customers through smartphones and other mobile devices). • know developments of latest digital marketing innovations, • know how to critically reflect on the concepts and methods of digital marketing management and how to apply them by completing case studies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Digital Marketing (Lecture) *Contents*: • Digital Marketing Strategy, • Digital Outbound Marketing, • Digital Inbound Marketing, • Social Media Marketing, • Mobile Marketing, • Outlook: Digital Marketing Innovations.	2 WLH
Examination: Written examination (60 minutes)	4 C
Examination: Case study discussion in lecture	2 C

Examination requirements: • Theoretical and solution-oriented elaboration of digital marketing instruments, • application of digital marketing concepts, • one case assessment, presentation and discussion inclass (collaboration with other students in teams).	

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Maik Hammerschmidt
Course frequency: each summer semester	**Duration:** 1 semester
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 60	

Additional notes and regulations:
Because of the case study discussion in lecture the maximum number of students is 60.

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0162: Managing the Future of Work**	6 C 2 WLH

Learning outcome, core skills: "Managing the Future of Work" is an interdisciplinary field of study, which aims to provide students with the managerial and methodological skills for future-oriented human resource management (HRM) strategies and practices. After taking this lecture, students will be familiar with and have acquired several key competencies and methods needed to identify and develop the HRM-practices of the future. They will be aware of challenges and opportunities facing the workforce of the future and will be able to adapt more easily and quickly to a changing working environment.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Managing the Future of Work (Lecture) *Contents*: Organizations face key challenges caused by technological, environmental and societal disruptions. Digitalization, a changing workforce, and environmental complexities necessitate a future-oriented HRM that can adapt to the changing requirements of the working world. The objective of this course is to introduce and to provide an understanding of how organizations can structure the "Future of Work" and how the management of people and practices will look like in the future. It raises awareness for the challenges and opportunities of the HRM of the future.	2 WLH
Examination: Written examination (60 minutes) or term paper (max. 10.000 words)	6 C

Examination requirements: • Demonstration of knowledge of the various characteristics, methods and problems of HRM practices regarding the "Future of Work", • ability to reproduce and reflect on strategies used by organizations and managers to implement future-oriented HRM practices and to deal with, and respond to challenges and opportunities.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Jintae Froese
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0174: Strategic Alliances Research**	6 C 2 WLH

Learning outcome, core skills: After successful participation in the module, students are able to compile, research and select the scientific literature relevant to a question in the field of strategic alliances. They are able to derive hypotheses from existing research, to test these hypotheses empirically and to critically reflect on their own contribution to research.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Strategic Alliances Research (Seminar) *Contents*: In the first part of the course, basic concepts and methods of strategic alliances research are taught. This refers in particular to reading, understanding, and writing research papers in the field of strategic alliances. Furthermore, students learn how to use the software STATA for quantitative-empirical analyses. In the second part of the course, students apply this knowledge by independently deriving a research question in the field of strategic alliances and empirically testing related hypotheses. They demonstrate this knowledge by presenting their own quantitative-empirical research paper in a presentation and a term paper.	2 WLH
Examination: Term paper (max. 12 pages per person) in group work **Examination prerequisites:** Regular attendance and presentation (approx. 20 minutes) in group work	6 C

Examination requirements: Students prepare a presentation and a term paper on a research question in the field of strategic alliances. They work in small groups and present the results of their work in the course. In doing so, they provide evidence of sound knowledge of the derivation of research questions and hypotheses, their quantitative-empirical testing, as well as subsequent critical reflection.	

Admission requirements: none	**Recommended previous knowledge:** Basic skills in empirical methods, e.g. M.WIWI-BWL.0168 Empirical Methods and Skills
Language: English	**Person responsible for module:** Prof. Dr. Matthias Schulz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0175: Entrepreneurship Research**	6 C 2 WLH

Learning outcome, core skills: After successful participation in the module, students are able to compile, research and select the scientific literature relevant to a question in the field of entrepreneurship. They are able to derive hypotheses from existing research, to test these hypotheses empirically and to critically reflect on their own contribution to research.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Entrepreneurship Research (Seminar) *Contents*: In the first part of the course, basic concepts and methods of entrepreneurship research are taught. This refers in particular to reading, understanding, and writing research papers in the field of entrepreneurship. Furthermore, students learn how to use the software STATA for quantitative-empirical analyses. In the second part of the course, students apply this knowledge by independently deriving a research question in the field of entrepreneurship and empirically testing related hypotheses. They demonstrate this knowledge by presenting their own quantitative-empirical research paper in a presentation and a term paper.	2 WLH
Examination: Term paper (max. 12 pages per person) in group work **Examination prerequisites:** Regular attendance and presentation (approx. 20 minutes) in group work	6 C

Examination requirements: Students prepare a presentation and a term paper on a research question in the field of entrepreneurship research. They work in small groups and present the results of their work in the course. In doing so, they provide evidence of sound knowledge of the derivation of research questions and hypotheses, their quantitative-empirical testing, as well as subsequent critical reflection.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0173 Entrepreneurship as well as basic skills in empirical methods, e.g. M.WIWI-BWL.0168 Empirical Methods and Skills
Language: English	**Person responsible for module:** Prof. Dr. Matthias Schulz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0179: High-Tech Marketing**	6 C 2 WLH

Learning outcome, core skills: • Understand principles of high-tech marketing and its relevance to innovation industries, • examine different theories of innovation and diffusion, • consumer preference analysis through methods like conjoint analysis & forecasting, • utilize market frameworks such as 3C-STP-4P to develop strategic marketing plans, • assess market uncertainty and competitive dynamics within high-tech sectors.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: High-Tech Marketing (Lecture with integrated exercises) *Contents*: **Fundamentals of high-tech marketing** • Introduction to high-tech marketing and its unique challenges, including technological uncertainty and rapid innovation cycles **Consumer behavior and market characteristics in high-tech** • Theories of innovation and diffusion, including radical vs. incremental innovation and their effects on product adoption • Methods for analyzing consumer preferences using conjoint analysis, forecasting techniques like diffusion models, and the impact of market uncertainty on behavior - **Strategic Approaches and Frameworks** • Application of the 3C-STP-4P marketing framework, with specific focus on high-tech products' segmentation, targeting, and positioning strategies. • The importance of strategic decisions in market pulls vs. technology push and how they affect long-term success	2 WLH
Examination: Presentation (approx. 15 minutes) with written elaboration (max. 6000 words)	6 C

Examination requirements: **Presentation (30%):** A 10-15 minute in-class presentation introducing the chosen high-tech product, focusing on key marketing strategy elements like segmentation, diffusion, and adoption **.** **Written elaboration (70%):** A detailed analysis (up to 6000 words) using diffusion theory and consumer preference tools to assess a high-tech product’s market strategy, segmentation, and adoption growth **.** The presentation with written elaboration should provide a comprehensive analysis of a marketing strategy for a high-tech product. This analysis must integrate theories and tools taught in the course, particularly diffusion theory and consumer preference analysis techniques. Students should apply these methods to evaluate how high-tech products achieve market adoption and growth.	

Admission requirements: none	**Recommended previous knowledge:** Hypothesis testing, (Logistic) Regression analysis, Basic marketing principles
Language: English	**Person responsible for module:** Ph.D. Stephen Youngjun Park
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0180: Corporate Valuation without and with Personal Taxes**	6 C 2 WLH

Learning outcome, core skills: After completing this course, the students deeply understand valuation with discounted cash flow methods under different financing strategies. Particular emphasis is placed on incorporating personal taxes into valuation and understanding the relationship between valuation without and with personal taxes. For all cases, students learn how to adjust the cost of equity to leverage and determine a firm's value with two-stage models. Additionally, the effects of the consideration of share repurchases on the value of a firm are integrated into the valuation models. The course not only provides theoretical competencies, but by implementing various exercises in Excel, the participants gain various practical skills in valuation.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Corporate Valuation without and with Personal Taxes (Lecture) *Contents*: The course is a mixture of lectures and exercises. **Content:** 1. Introduction 2. Valuation only with Corporate Taxes 3. Valuation with Corporate and Personal Taxes 4. Problems and Simplifications in Valuation Practice 5. Summary **Remark:** The online course takes place via Zoom. The course is open to students from the University of Kyiv (Ukraine), the University of Tartu (Estonia), the University of Ghent (Belgium), and the University of Göttingen (Germany). The number of participants is restricted to 10 students from each university, i.e., a total of 40 students. The number of students is limited to 10 from the University of Göttingen due to the processing of case studies.	2 WLH
Examination: Processing of case studies with Excel in group work	6 C

Examination requirements: Case studies in teams mainly during the course with Excel; one case study is given at the end of the course. The teams have to send a well-formatted Excel file with the solution of all case studies within two weeks after the end of the course to the lecturer. Students are expected to prove their theoretical knowledge in valuation without and with personal taxes. The students have to apply their knowledge in case studies using Excel.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-BWL.0085 Finance, Management Accounting and Sustainability Accounting
Language:	**Person responsible for module:**

English	Prof. Dr. Stefan Dierkes
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 10	

Additional notes and regulations:
The number of students is limited to 10 persons from the University of Göttingendue to the processing of case studies.

Georg-August-Universität Göttingen **Module M.WIWI-BWL.0182: Sustainable Investing and Investor Stewardship: Context and Practice**	6 C 2 WLH

Learning outcome, core skills: After completing the module, students understand the institutional, strategic, and regulatory foundations of sustainable investing and stewardship. They are familiar with the roles of different investor types in advancing sustainability in financial markets and corporate governance. Students can critically evaluate stewardship tools such as ESG integration, engagement, voting, and net-zero commitments, and apply them using real-world case studies. They also build practical skills in team-based analysis and the professional presentation of sustainability-related investor-company interactions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Sustainable Investing and Investor Stewardship: Context and Practice (project seminar) *Contents*: The seminar examines the conceptual and practical foundations of sustainable investing and investor stewardship. It covers the role of capital markets in the sustainability transition, the responsibilities and influence of key institutional investors, including pension funds, asset managers, and proxy advisors, and the mechanisms of stewardship. Core topics include ESG integration, shareholder engagement, voting strategies, and collaborative initiatives. Real-world case studies illustrate how investors interact with companies on sustainability issues and navigate regulatory, strategic, and reputational considerations.	2 WLH
Examination: Processing a case study (case study presentation (approx. 90 minutes) with structured notes) **Examination prerequisites:** regular attendance	6 C

Examination requirements: To successfully complete the module, students demonstrate an understanding of the institutional, strategic, and regulatory foundations of sustainable investing and investor stewardship. They are able to assess stewardship frameworks, such as ESG integration, engagement, and voting, and apply these in real-world investment contexts. In the case study, students evaluate companies based on an assigned investment strategy and develop suitable stewardship approaches. This requires analytical skills, teamwork, and the ability to present investment-related recommendations. The written reflection shows their ability to critically examine stewardship strategies and sustainability-related investor decisions.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Hans-Christoph Hirt
Course frequency:	**Duration:**

each winter semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-HGM.0001: Economic, Business and Social History I**	12 C 6 WLH

Learning outcome, core skills: Students will be able to critically discuss and analyze the structures of global capitalism and the history of transnational economic flows. In class presentations and written term papers they will learn to identify major problems of transcultural economic processes and to apply this theoretical and contextual knowledge to the analysis of specific historical case studies.	**Workload:** Attendance time: 84 h Self-study time: 276 h

Course: Economic, Business and Social History I (Lecture) *Contents*: The lecture course will provide a broad survey of a specific time period (e.g. nineteenth century, postwar era), topic (business history, globalization) or region (Europe, Germany, United States). The focus of the lecture course changes each semester.	2 WLH
Course: Economic, Business and Social History I (Exercise) *Contents*: The tutorial course accompanies the lecture with discussion and additional readings.	2 WLH
Examination: Oral examination (approx. 15 minutes)	6 C

Course: Economic, Business and Social History I (Seminar) *Contents*: Master seminars familiarize students with specific aspects of social and economic history, often in thematic connection with the lecture course. Texts and discussion focus on current historiographic research and its application to historical and economic analysis.	2 WLH
Examination: Term Paper (max. 20 pages) with presentation (approx. 15 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: Familiarity with the basic structural developments of global capitalism; ability to identify and reflect on fundamental economic problems, knowledge of recent scholarship and critical evaluation of historical theories, independent research and ability to creatively apply problem-solving methodologies. Each examination requires the application of these broader concepts and methodologies to the specific topics of the particular seminars offered.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Hartmut Berghoff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-HGM.0004: History of Global Markets: Perspectives**	6 C 2 WLH

Learning outcome, core skills: Students learn about specific historical approaches to the study of global markets such as e.g. global or business history. They become familiar with concepts, questions and methods that are typical for the specific approach to which the course is devoted.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: History of Global Markets: Perspectives (Seminar or lecture) *Contents*: The course introduces a selected perspective on economic and social developments, relevant to the emergence and change of global market economies. Examples for a perspective are such approaches as global history, business history, history of consumption, social history, and the history of ideas. **Recommended Reading:** Specific literature recommendations are provided each semester. Please refer to current course listing.	2 WLH
Examination: seminar: term Paper (max. 20 pages) with presentation (approx. 15 minutes) or lecture: oral examination (approx. 15 minutes) **Examination prerequisites:** Regular attendance (seminar)	6 C

Examination requirements: Familiarity with the basic concepts and developments, ability to reflect pertinent problems, and to critically discuss the hypotheses and interpretations brought forward by academic research.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Hartmut Berghoff
Course frequency: each second semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Additional notes and regulations: Maximum number of students in seminars: 20 participants. No participant restriction for lectures.

Georg-August-Universität Göttingen **Module M.WIWI-HGM.0007: Global Varieties of Capitalism**	6 C 2 WLH

Learning outcome, core skills: Students will learn to apply the theoretical frameworks to concrete empirical examples looking at historical differences and path-dependencies e.g. in labor relations, industry coordination, corporate strategies, or state regulation in a global perspective. They will be able to compare and critically analyze different economic systems within their respective historical contexts and to evaluate their comparative advantages.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Global Varieties of Capitalism (Seminar) *Contents*: The seminar offers a survey of the current state of research in the varieties of capitalism literature. Readings and discussion will provide theoretical approaches, emphasizing the role of actors and institutions in economic development. Comparing primarily European, Asian, Latin- and North American economies, the module will explore various typologies as well as fundamental differences and similarities between liberal and coordinated market economies. Special emphasis will be given to questions of innovation and relative stagnation of "Rhenish Capitalism" in various branches of industry within a comparative framework.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 15 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: Familiarity with the basic conceptual tenants of the varieties of capitalism theory; ability to historically contextualize elements of economic systems and to evaluate relative strengths and challenges involved with different organizational forms of market economies.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hartmut Berghoff
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-HGM.1001: History of Global Markets I**	12 C 4 WLH

Learning outcome, core skills: Students will be able to critically discuss and analyze the structures of global capitalism and the history of transnational economic flows. In class presentations and written term papers they will learn to identify major problems of transcultural economic processes and to apply this theoretical and contextual knowledge to the analysis of specific historical case studies.	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Intensive Module in the History of Global Markets (Seminar I) *Contents*: Emphasizing specific regions, themes or time periods, the courses will familiarize students with basic aspects of the development of global market structures in the 19th and 20th century. The seminars will emphasize questions of global migration, labor markets, management and marketing history. Texts and discussion will focus on current historiographic research and its application to the analysis of globalization processes.	2 WLH
Examination: Term paper (max. 20 pages) with presentation (approx. 15 minutes) **Examination prerequisites:** Regular attendance.	6 C

Course: Intensive Module in the History of Global Markets (Seminar II) *Contents*: Emphasizing specific regions, themes or time periods, the courses will familiarize students with basic aspects of the development of global market structures in the 19th and 20th century. The seminars will emphasize questions of global migration, labor markets, management and marketing history. Texts and discussion will focus on current historiographic research and its application to the analysis of globalization processes.	2 WLH
Examination: Term paper (max. 20 pages) or oral examination (approx. 15 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: Familiarity with the basic structural developments of global capitalism; ability to identify and reflect on fundamental economic problems, knowledge of recent scholarship and critical evaluation of historical theories, independent research and ability to creatively apply problem-solving methodologies. Each examination requires the application of these broader concepts and methodologies to the specific topics of the particular seminars offered.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Hartmut Berghoff

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0001: Generalized Regression**	6 C 4 WLH

Learning outcome, core skills: The students • gain an overview on extended regression modelling techniques that allow to analyse data with non-normal responses. • learn about approaches for modeling nonlinear effects in scatterplot smoothing. • get an introduction to additive models and mixed models for complex regression analyses. • learn how to implement these approaches using statistical software packages.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Generalized Regression (Lecture) *Contents*: Generalized linear models (binary and Poisson regression, exponential families, maximum likelihood estimation, iteratively weighted least squares regression, tests of hypotheses, confidence intervals, model selection and model checking, categorical regression models), nonparametric smoothing techniques (penalized spline smoothing, local smoothing approaches, general properties of scatterplot smoothers, choosing the smoothing parameter, bivariate and spatial smoothing, generalized additive models), mixed models, quantile regression	2 WLH
Course: Generalized Regression (Tutorial) *Contents*: Generalized linear models (binary and Poisson regression, exponential families, maximum likelihood estimation, iteratively weighted least squares regression, tests of hypotheses, confidence intervals, model selection and model checking, categorical regression models), nonparametric smoothing techniques (penalized spline smoothing, local smoothing approaches, general properties of scatterplot smoothers, choosing the smoothing parameter, bivariate and spatial smoothing, generalized additive models), mixed models, quantile regression	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 20 minutes)	6 C

Examination requirements: In the exam, the students demonstrate their ability to choose, fit and interpret extended regression modeling techniques. They show a general understanding of the derived estimates and their interpretation in various contexts. The students are able to implement complex regression models using statistical software and to interpret the corresponding results. The exam covers contents of both the lecture and the exercise class.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistical modelling using linear regression models

	M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes)
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: not limited	

Additional notes and regulations:
The actual examination will be published at the beginning of the semester.

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0004: Econometrics I**	6 C 6 WLH

Learning outcome, core skills: This lecture provides a detailed introduction and discussion to the theory of several topics of econometrics. In a practical course the students will apply the methods discussed to real economic data and problems using the statistical software packages Eviews and R.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Econometrics I (Lecture) *Contents*: Multiple linear regression model: Estimation, Inference and Asymptotics. Maximum likelihood modeling. Generalized least squares. Stochastic regressors. Intrumental variable estimators. Generalized method of moments, likelihood based inference. Dynamic models, weak exogeneity, cointegration, stochastic integration.	2 WLH
Course: Econometrics I (Exercise) *Contents*: The practical deepens the understanding of the lecture topics by applying the methods from the lecture to economic problems and data, and reviewing and intensify theoretical concepts.	2 WLH
Course: Econometrics I (Tutorial) *Contents*: The tutorials are small classes with max. 20 students, which give room for applying the concepts to specific problem sets and discussing questions, that students might encounter regarding the concepts addressed in the lecture and practical. A part of the tutorial are hands-on computer exercises using the software R. This enables students to conduct regression analysis in practice and prepares them for others (applied) courses.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Linear regression models, generalized linear regression models. OLS, GLS, EGLS estimation. Multiplikative heteroskedasticity, autocorrelation. LM specification testing, Durbin Watson test. Convergence in probability, convergence in distribution. Asymptotics (consistency, asymptotic normality) of OLS estimators. IV estimation, GMM estimation.	

Admission requirements: none	**Recommended previous knowledge:** Required: Mathematics (linear algebra), statistics. Desirable: Introduction to Econometrics (or comparable lecture).
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: each semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0005: Econometrics II**	6 C 4 WLH

Learning outcome, core skills: As the outcome of this advanced course the students are able to • identify problems of estimation and inference arising due to stochastic regressors, • establish finite sample and asymptotic properties of estimators under the assumption that the data generating process contains stochastic regressors, • model simple univariate stationary and non-stationary time series processes, • carry out and interpret test results of unit root and cointegration tests, • set up, and estimate (over-, under-) identified simultaneous equation models, • model simple multivariate time series with possible cointegration, • implement estimators and analyze real world datasets with the R programming language.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Econometrics (Lecture) *Contents*: Stochastic regressors in linear econometric models; OLS, IV, 2SLS, GMM estimators; Dynamic linear econometric models: stationary stochastic processes, ARMA models, (testing) unit roots, (testing) cointegration, spurious regression; Simultaneous equation models: Identification, estimation (GLS, IV, 2SLS, 3SLS, ILS) Vector autoregressive and error correction models: Interpretation, estimation, inference.	2 WLH
Course: Econometrics II (Exercise) *Contents*: Exercises deepening concepts from the lecture, and demonstrating practical applications. Simulations and data analysis exercises using the R programming language.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The students demonstrate their understanding of advanced econometric concepts. They show that they can apply these concepts to real economic problems.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0009: Introduction to Time Series Analysis**	6 C 4 WLH

Learning outcome, core skills: The students: • learn concepts and techniques related to the analysis of time series and forecasting, • gain a solid understanding of the stochastic mechanisms underlying time series data, • learn how to analyse time series using statistical software packages and how to interpret the results obtained.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to Time Series Analysis (Lecture) *Contents*: Classical time series decomposition analysis (moving averages, transformations of time series, parametric trend estimates, seasonal and cyclic components), exponential smoothing, stochastic models for time series (multivariate normal distribution, autocovariance and autocorrelation function), stationarity,spectral analysis, general linear time series models and their properties, ARMA models, ARIMA models, ARCH and GARCH models.	2 WLH
Course: Introduction to Time Series Analysis (Tutorial) *Contents*: Practical and theoretical exercises covering the content of the lecture. Implementation of time series models and estimation by common statistical software (e.g. R or Matlab). Interpretation of estimation results.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The students show their ability to analyze time series using specific statistical techniques, can derive and interpret properties of stochastic models for time series, and can decide on appropriate models for given time series data. The students are able to implement time series analyses using statistical software and to interpret the corresponding results. The exam covers contents of both the lecture and the exercise class.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistics M.WIWI-QMW.0004 Econometrics I
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Maximum number of students: 50	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0012: Multivariate Time Series Analysis**	6 C 4 WLH

Learning outcome, core skills: The students: • learn concepts and techniques related to the analysis of multivariate time series and the forecasting thereof. • learn to characterize the dynamic interrelationship between the variables of dynamic systems, • learn to relate economic models with restrictions implied by its empirical counterpart, • learn how to analyse multivariate time series using by means of statistical software packages and to interpret the results obtained.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Multivariate Time Series Analysis (Lecture) *Contents*: Vector Autoregressive and Vector Moving Average representations Model selection and estimation, Unit roots in vector processes, Vector autoregressive vs. vector error correction modeling, structural vectorautoregressions, Impulse response analysis, forecasting, forecast error variance decomposition	2 WLH
Course: Multivariate Time Series Analysis (Tutorial) *Contents*: Practical and theoretical exercises covering the content of the lecture. Implementation of multivariate time series models and estimation in common statistical software (e.g. R or Matlab). Interpretation of estimation results.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The students show their ability to analyze systems of time series using specific statistical techniques, can derive and interpret properties of stochastic models for time series, and can decide on appropriate models for given data. The students are able to implement time series analyses using statistical software and to interpret the corresponding results. The exam covers contents of both the lecture and the exercises.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledgin in statistics M.WIWI-QMW.0004 Econometrics I M.WIWI-QMW.0009 Introduction to Time Series Analysis
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0013: Applied Econometrics**	6 C 4 WLH

Learning outcome, core skills: The students • independently develop empirical analyses on predetermined subjects including data search, model choice, software choice, discussion of results • possible applications: econometric validation of economic models, quantification of model parameters, prediction	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Applied Econometrics (Lecture) *Contents*: Discussion of relevant statistical concepts for concrete economic models (purchasing power parity, money demand, Fisher hypothesis, (dynamic) capital asset pricing model, etc.), introduction to the economic model and exemplary data analysis. The studied models can differ by the semester.	2 WLH
Course: Applied Econometrics (Exercise) *Contents*: Based on the contents of the lecture: data preparation and model implementation with statistical software (e.g. R or Matlab), discussion of results, theoretical exercises	2 WLH
Examination: Term paper (max. 15 papers) or written examination (90 minutes)	6 C

Examination requirements: In the case study the students show their ability to search data for a given economic problem and analyze the question by means of appropriate econometric methods. The examination includes a detailed description of the problem setting, proposed solution and discussion of results. Depending on the specific topic small simulation studies can be a further assignment. The written exam covers contents of the lecture and the exercises. The students show their ability to analyze economic problems applying specific statistical techniques, can derive and interpret properties of the models, and can decide on appropriate models for given data. The students are able to implement analyses using statistical software and to interpret the corresponding results.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistics M.WIWI-QMW.0004 Econometrics I M.WIWI-QMW.0009 Introduction to Time Series Analysis
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: once a year	**Duration:** 1 Semester
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0016: Spatial Statistics**	6 C 4 WLH

Learning outcome, core skills: The students • get familiar with basic concepts and examples of stochastic processes. • learn about the principle possibilities to include spatial information in statistical models. • acquire experience in the practical analysis of spatial data • learn how to interpret the results of spatial analyses	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Spatial Statistics (Lecture) *Contents*: Stochastic processes in discrete and continuous time, Wiener process, Poisson process, Markov chains, statistical analysis of spatially oriented data, spatial models for point-referenced data (geostatistics, kriging), spatial models for regional data (Markov random fields), spatial point processes, spatial stochastic processes, statistical inference in spatial statistics.	2 WLH
Course: Spatial Statistics (Exercise) *Contents*: Stochastic processes in discrete and continuous time, Wiener process, Poisson process, Markov chains, statistical analysis of spatially oriented data, spatial models for point-referenced data (geostatistics, kriging), spatial models for regional data (Markov random fields), spatial point processes, spatial stochastic processes, statistical inference in spatial statistics.	2 WLH
Examination: Written examination (90 minutes) or oral examination (ca. 20 minutes)	6 C

Examination requirements: The students show in the exam that they have learned to perform the basic steps and calculations involved in analyses of stochastic processes and spatial data. They can choose the most appropriate model for a given problem and can implement this model in statistical software. In addition, the resulting estimates can be interpreted and the results can be critically evaluated. The exam covers contents of both the lecture and the exercise class.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistical modelling using linear regression models M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes)
Language: English	**Person responsible for module:** Prof. Dr. Elisabeth Bergherr
Course frequency: once a year	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Additional notes and regulations:
The actual examination will be published at the beginning of the semester.

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0021: Introduction to Statistical Programming**	3 C 2 WLH

Learning outcome, core skills: The students: • get to know the basic functionality of the statistical software package R • can implement advanced statistical approaches in R while using approproate tools for optimising the code	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Introduction to Statistical Programming (Lecture with tutorial) *Contents*: Data types and class structures, vectors and matrices, reading and writing data, statistical graphics, creating R packages, including other programming languages, debugging and profiling code, S3 and S4 classes, Trellis graphics and other advanced graphics features	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 20 minutes) or term paper (max. 10 pages) **Examination prerequisites:** Presentation (approx. 40 minutes) or Exercises (50% successful completion)	3 C

Examination requirements: The students demonstrate their understanding of the basic concepts of statistical programming with R. In particular, they demonstrate their ability to implement statistical methodology in R, to document their code and to use programming tools for debugging and optimizing the code.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of mathematics and statistics
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 30	

Additional notes and regulations: The actual examination will be published at the beginning of the semester.

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0025: Development Microeconometrics**	6 C 4 WLH

Learning outcome, core skills: Upon successful completion of the course, students will be able to: • discuss the strengths and weaknesses of contemporary microeconometric tools that are widely applied in development economics, • apply these microeconometric methods on real world data using the statistical software Stata and interpret estimation results, • discuss important classifications of micro data and suggest appropriate econometric tools to analyze them, • take tabular data, clean it, and run several inferential statistical analyses using Stata, • critically review published articles in development economics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Development Microeconometrics (Lecture) *Contents*: 1. Multiple regression: basic concepts and tests 2. Instrumental variables estimation and two stages least squares 3. Panel data: fixed effects and random effects estimators, dynamic panel data estimators 4. Models with limited dependent variables: Logit, Probit, Multinomial logit, Ordered logit, Tobit model, Heckman's sample selection model, Count data models, 5. Estimating treatment effects, propensity score matching, regression discontinuity design	2 WLH
Course: Development Microeconometrics (Exercise) *Contents*: The exercise starts with an introduction to Stata. Subsequent sessions are devoted to applying the econometric tools discussed in the lecture on empirical data, thereby deepening the students' understanding of the econometric methods. Following the topics discussed in the lecture, students will receive exercises (accompanied by real data) that they should try to solve using Stata before coming to the Stata session, where we will solve the exercises together. Stata do-files will be made available at the end of each session.	2 WLH
Examination: Written examination (90 minutes) or oral examination (ca. 20 minutes)	6 C

Examination requirements: In the exam, students are expected to show their familiarity with and understanding of main microeconometric tools used in in development economics. In addition to the economic and econometric concepts, they are expected to write Stata codes for solving a given empirical question and interpret Stata outputs.	

Admission requirements:	**Recommended previous knowledge:**
none	M.WIWI-QMW.0004 Econometrics I

Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0027: Advanced Meta-Research in Economics**	6 C 4 WLH

Learning outcome, core skills: The students learn why replications are needed to improve the reliability of published empirical findings. Moreover, they learn to replicate an empirical study by using the statistical software R. To this end, they gain knowledge in the econometric methods used in the empirical study that is replicated and learn how these methods are implemented in R.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Meta-Research in Economics (Lecture) *Contents*: The lecture discusses the importance of replications in improving the reliability of published empirical findings. Sources of biases in empirical findings are analyzed and empirical evidence of these biases is presented and discussed. An overview of replications is given including a discussion of the recent replication crisis in economics. Characteristics of replications in economics are discussed highlighting different types of replications. Topics: 1. Incentives in academic publishing 2. p-hacking, HARKing and publication bias 3. Replications in economics 4. Empirical evidence of biases 5. Models of empirical research	2 WLH
Course: Advanced Meta-Research in Economics (Exercise) *Contents*: The exercise starts with an introduction to the statistical software R. The exercise follows the topics discussed in the lecture and deepens the understanding of these topics by providing and discussing tasks to be solved in R.	1 WLH
Course: Advanced Meta-Research in Economics (Tutorial) *Contents*: The students replicate a published article using the statistical software R. The replication tutorial offers help in acquiring knowledge of the econometric methods used in the articles that have to be replicated. Students can also get help in how these methods can be implemented in R.	1 WLH
Examination: Practical examination (max. 10 pages)	6 C

Examination requirements: The students select articles from a list or suggest articles that they then replicate using the statistical software R. They write a report of their replications discussing their findings in the light of the concepts introduced in the lecture and exercise. Both verifications of the published findings and careful sensitivity analyses are implemented. The R code is part of the examination.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz Dr. Stephan Bruns
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0033: Current Topics in Applied Statistics**	6 C 2 WLH

Learning outcome, core skills: The students: • learn how to study current topics in applied statistics independently and how to make themselves familiar with the state of the art of current research, • learn how to present the current state of the art in a presentation in a way that makes the contents accessible to a wider audience (and in particular other students), • can evaluate current publication with respect to their applicability for a given research question, • can implement novel statistical methods and apply them to empirical data.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Current Topics in Applied Statistics (Seminar) *Contents*: In the seminar, current topics in applied statistics will be presented and discussed by the students.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (ca. 45 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: The students demonstrate their ability to present statistical and econometric models and results and to document their findings in a corresponding report.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes) M.MED.0001 Linear Models and their Mathematical Foundations M.WIWI-QMW.0021 Introduction to Statistical Programming
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 15	

Additional notes and regulations: The module is suitable for students of the Master's degree program Applied Statistics, as advanced statistical knowledge is required.

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0034: Python for Econometrics**	6 C 2 WLH

Learning outcome, core skills: Students learn how to work with Python, one of the most powerful and versatile programming languages, and its efficient use in the field of numerical programming applied to economics. After their successful participation they have gained sufficient knowledge to understand Python-based statistical programs and carry out independent data analysis on their own by using Python. The participants also obtain a profound understanding of the critical evaluation of code pieces and a starting point for further in-depth studies in the field of applied data science.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Python for Econometrics (Lecture) *Contents*: In recent years, Python has established itself alongside R at the forefront of numerical programming languages. Very similar to the programming with MATLAB, mathematical-statistical representations from technical literature, such as econometric textbooks, can be implemented compactly and easily in the programming language Python and its scientific extensions. Following a concise introduction to the general-purpose language framework, the students learn how to design, implement and exchange their own data analysis projects in an object-oriented way: 1. Introduction to Python and object orientation. 2. Numerical programming - compared to MATLAB and R. 3. Data formats, handling, exports and imports - file and web. 4. Statistical analysis with applications in economics. 5. Visual illustrations and presentation of scientific results. The participants get familiar with Python’s way of thinking and learn how to solve (scientific) programming problems with a state-of-the-art tool.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The participants are expected to answer question sets about the programming language Python, about data analysis with Python and to demonstrate their knowledge on the basis of practical tasks.	

Admission requirements: none	**Recommended previous knowledge:** Scientific Programming, Statistical Programming with R or equivalent.
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: each semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0036: Economic and Business Forecasting**	6 C 4 WLH

Learning outcome, core skills: The students: • learn basic concepts of prediction that develop, for instance, from regression or time series models, • gain a solid understanding of issues related to the evaluation of alternative predictors, • learn how to analyze empirical data by means of statistical software packages with a particular focus on forecasting exercises.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economic and Business Forecasting (Lecture) *Contents*: Forecasts are produced in numerous areas such as business, economics, finance and many other fields. Forecasts are useful if they help to improve the decision-making process. The lecture provides an introduction to statistical/econometric methods to produce and evaluate forecasts. We discuss different type of loss functions, forecasting frameworks, statistical models, and optimal point predictions for selected loss functions along with the classical forecasting techniques (e.g. regression and univariate time series models). To monitor forecast performance we will discuss evaluation of single and multiple forecast methods. Selected topics will also deal with density and interval forecasts as well as forecast combination methods. Examples from applied forecasting will be used to illustrate the concepts throughout the lecture.	2 WLH
Course: Economic and Business Forecasting (Exercise) *Contents*: Practical and theoretical exercises covering the content of the lecture. Implementation of forecasting exercises with common statistical software (e.g. R or Matlab). Interpretation of estimation results.	2 WLH
Examination: Written examination (60 minutes) or oral examination (approx. 20 minutes)	6 C

Examination requirements: • The students show their familiarity with established forecasting models as well as with their implementation and economic and statistical evaluation, • the students are able to implement alternative predictors by means of statistical software, • they can critically discuss the (complementary) informational content of alternative predictors and interpret the corresponding results, • the exam covers both theoretical aspects of prediction and forecast evaluation as well as discussions of practical exercises.	

Admission requirements:	**Recommended previous knowledge:**
none	M.WIWI-QMW.0004 Econometrics I

	M.WIWI-QMW.0009 Introduction to Time Series Analysis
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0037: Advanced Bayesian Inference**	6 C 4 WLH

Learning outcome, core skills: The students: • learn about the computational challenges of and approaches to Bayesian inference, • get familiar with both simulation-based and approximate solutions to perform Bayesian inference, • learn how to utilize Bayesian inference for complex types of statistical models.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Bayesian Inference (Lecture) *Contents*: • Principles of Bayesian inference, • Markov chain Monte Carlo (MCMC) simulation techniques, • constructing sensible proposal distributions for MCMC, • constructing prior distributions, • model diagnostics and model criticism, • approximate forms of Bayesian inference, • variational Bayes inference, • Reversible jump MCMC, • Bayesian inference for semiparametric regression models.	2 WLH
Course: Advanced Bayesian Inference (Exercise) *Contents*: In the context of the supporting exercise, the students deepen and expand the knowledge and skills acquired in the lecture.	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 20 minutes) or software project including term paper (max. 10 pages)	6 C

Examination requirements: The students demonstrate their advanced understanding of Bayesian inference for different types of statistical models. They know about the advantages and disadvantages as well as general properties of Bayesian inference, can critically assess the appropriateness for specific problems, and can implement them in statistical software.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0001 Generalized Regression M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes) M.WIWI-QMW.0011 Advanced Statistical Programming with R M.MED.0001 Linear Models and their Mathematical Foundations
Language:	**Person responsible for module:**

English	Prof. Dr. Thomas Kneib
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0039: Seminar Economic and Business Forecasting**	6 C 2 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • work with real-world data using statistical software (e.g. R, Matlab), • use basic concepts of prediction, • evaluate forecasts, • extent knowledge about the relevance of different forecasting techniques in Economics and Businesses.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Economic and Business Forecasting (Seminar) *Contents*: Motivated by the importance of expectations in the decision-making process of economic and business agents, forecasts of economic and business indicators (e.g. GDP, interest rates, stock market returns, commodity prices) are of key importance. Students will use statistical software to produce and evaluate an optimal point forecast for a selected loss function along the classical forecasting techniques (e.g. regression/ univariate time series models). During the seminar, we will have some sessions dedicated to teaching statistical software skills. Finally, students improve their knowledge about the relevance of forecasting to the specific areas under study. Examples for forecasting topics in economic and business are stock market indices, inflation rates, unemployment, weather patterns, sales volume, commodity prices etc.	2 WLH
Examination: Presentation (approx. 20 minutes) and written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students are expected to write a scientific paper of no more than 15 pages and demonstrate strong presentation skills. In fulfilling these requirements, students must use statistical software to implement an econometric model and generate an optimal forecast within the framework of their chosen topic. This includes also sufficient efforts in data gathering and preprocessing. In addition, students should be able to evaluate and relate their forecasts to relevant literature in the fields of economics and business.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I M.WIWI-QMW.0009 Introduction to Time Series Analysis M.WIWI-QMW.0036 Economics and Business Forecasting
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz

Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0040: Introduction to Statistical Methods in Economic Sciences**	6 C 4 WLH

Learning outcome, core skills: Upon completing this course, students will have acquired a robust set of competencies integral to empirical research in economic sciences. They will demonstrate the ability to proficiently describe and apply statistical methods, spanning from estimation theory to testing concepts, for empirical analysis. Additionally, they will critically assess estimator properties in both finite sample and asymptotic contexts. Furthermore, students will develop the capacity to avoid common pitfalls and errors in interpreting the statistical results from empirical studies through a blend of theoretical understanding and hands-on application. The course fosters the skillset needed to analyze and discuss research findings, promoting critical thinking and the ability to engage in insightful discussions surrounding statistical methodologies.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to Statistical Methods in Economic Sciences (Lecture) *Contents*: **Foundations of probability theory** • random variables and their distributions • law of large numbers and its applications • expected values and moments **Estimation theory** • estimation concepts and methodologies • point estimates and their comparison • techniques for summarizing and presenting data effectively • method of moments, maximum likelihood estimation and their properties • weak convergence in law **Fundamentals of hypothesis** • concepts of hypothesis testing • confidence sets • Bayesian concepts	2 WLH
Course: Introduction to Statistical Methods in Economic Sciences (Exercise) *Contents*: In the accompanying exercises, students will apply lecture methods to concrete problems, engaging in hands-on tasks with economic data. These sessions aim to reinforce theoretical concepts, foster critical analysis and problem-solving skills.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: The students: • will be assessed on their ability to apply statistical methods to concrete issues,	

- showcasing a comprehensive understanding of theoretical concepts covered in the course.

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in calculus
Language: English	**Person responsible for module:** Dr. Shu Wang
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0041: Stochastic Processes**	6 C 4 WLH

Learning outcome, core skills: Upon completion of the module, the students have acquired the following competencies: • familiarity with concepts of different stochastic processes, • experience in the practical analysis of modeling data via stochastic processes, • interpretation of the results of such models.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Stochastic Processes (Lecture) *Contents*: Stochastic processes in discrete and continuous time such as Wiener processes, Poisson processes, Markov chains, Markov processes.	2 WLH
Course: Stochastic Processes (Exercise) *Contents*: In the accompanying exercise, students deepen and expand the knowledge and skills acquired in the lecture.	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 25 minutes)	6 C

Examination requirements: The students show in the exam that they have learned to perform the steps and calculations involved in analyses of stochastic processes. They can choose the most appropriate model for a given problem and can implement this model in statistical software. In addition, the resulting estimates can be interpreted and the results can be critically evaluated. The exam covers contents of both the lecture and the exercise class.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistical modelling, M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes)
Language: English	**Person responsible for module:** Prof. Dr. Elisabeth Bergherr
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0042: Computational Statistics**	6 C 4 WLH

Learning outcome, core skills: At the conclusion of the course, students will have the ability to know fundamental concepts in statistical computing and address large-scale problems by employing efficient methods, considering the computational resources available. In addition, students will have the competence to select appropriate methodologies for approximating solutions, either by formulating their own computational expressions or by utilizing advanced computation libraries codified within the statistical software R. Furthermore, the students will be capable of creating probabilistic models using the platforms of modelling Template Model Builder (TMB) and Stan.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Computational Statistics (Lecture) *Contents*: 1. Introduction to statistical computing 2. Numerical linear algebra 3. Optimization 4. The EM algorithm 5. Laplace approximation 6. Monte Carlo method 7. Markov Chain Monte Carlo	2 WLH
Course: Computational Statistics (Exercise) *Contents*: In the practical session, knowledge will be extended and intensified theoretically and practically in the statistical software R. Additionally, probabilistic models will be developed utilizing the interfaces offered by TMB and Stan within the environment of R.	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** Successful completion of homework exercises	6 C

Examination requirements: • Demonstration of understanding basic concepts of linear algebra, computational methods and programming, • implementing statistical methods in the software R, • implementation of simple statistical models in C++ (TMB and Stan), • theory (solving exercises by hand) and programming statistical models.	

Admission requirements: none	**Recommended previous knowledge:** Statistical modelling using linear regression models, M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes)
Language: English	**Person responsible for module:** Dr. Joaquin Cavieres
Course frequency:	**Duration:**

each summer semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-QMW.0043: Interactive Representation of Statistical Methods**	6 C 2 WLH

Learning outcome, core skills: The Students: • learn how to study current topics in applied statistics independently and how to make themselves familiar with the state of the art of current research, • learn how to work with a complex data set, • learn how to implement an interactive tool to represent both the data and the methodologies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Interactive Representation of Statistical Methods (Seminar) *Contents*: In the seminar, the students will get an introduction to a programming concept (like e.g. RShiny), which allows to implement interactive online tools for presenting statistical models. They will then work on and present their implementation of a project which has been chosen at the beginning of the semester. It will entail both, a complex data set and an advanced statistical method.	2 WLH
Examination: Development of a prototype (development of a web application including a written documentation (max. 15 pages) and a presentation of the project outcomes (approx. 25 minutes)) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: The students demonstrate their ability to implement statistical models and results in an accessible way and to document their findings in a corresponding presentation as well as a report.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0002 Advanced Statistical Inference (Likelihood & Bayes), M.MED.0001 Linear Models and their Mathematical Foundations, M.WIWI-QMW.0021 Introduction to Statistical Programming
Language: English	**Person responsible for module:** Prof. Dr. Elisabeth Bergherr
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students:	

15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0001: Advanced Microeconomics**	6 C 4 WLH

Learning outcome, core skills: This course covers advanced microeconomic models. In this regard students are provided with the skills required to understand these models including advanced methods of calculus and basic proof techniques. Students learn how to formalize and analyze individual decision making and strategic interactions. They will get acquainted with models of individual choice under certainty and uncertainty. Students will be able to analyze decision problems of firms. They can distinguish between partial analysis of isolated markets and a general analysis considering mutual dependencies of markets. Finally, students will be able to formalize strategic interactions and to predict their theoretical outcomes based on a variety of solution concepts.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Microeconomics (Lecture) *Contents*: This course presents a formal treatment of microeconomic theory. 1. Rational choice under certainty 2. Consumer theory 3. Rational choice under uncertainty 4. Partial equilibrium 5. General equilibrium 6. Game theory	2 WLH
Course: Advanced Microeconomics (Exercise) *Contents*: The exercise deepens the understanding of concepts presented in the lecture. Students will receive problem sets, which they are requested to prepare at home. The solutions of these problem sets will be discussed in class.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate the capability to understand advanced economic models • Demonstrate the understanding of the main concepts of individual choice theory • Apply techniques developed in the lecture and in the exercise such as the method of Lagrange multipliers or the Edgeworth Box • Demonstrate the basic knowledge of the theory of partial and general equilibrium • Prove the ability to solve analytical exercises • Find the game theoretical solutions to strategic interactions • Conduct advanced calculations	

Admission requirements: none	**Recommended previous knowledge:** BA level microeconomics and mathematics
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser Prof. Marcela Ibanez Diaz

Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0008: Development Economics I: Macro Issues in Economic Development**	6 C 4 WLH

Learning outcome, core skills: Expose students to macroeconomic issues in economic development, including how economic growth, trade, inequality, aid, capital flows, and population issues affect economic development. They understand historical roots of underdevelopment and acquire knowledge of current economic models and empirical approaches in these topic areas.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Development Economics I (Lecture) *Contents*: Overview of macroeconomic issues and approaches to analyzing problems of developing countries. Topics include measurement of development, historical evolution of income differences, growth theory, and linkages between globalization, aid, debt, population, the environment, and inequality and economic development.	2 WLH
Course: Development Economics I (Exercise) *Contents*: The exercise session is used to deepen understanding of concepts used in the lecture, discuss relevant literature, and apply concepts and methods developed in the lecture.	2 WLH
Examination: Written Exam **Examination prerequisites:** Submission of 6 exercise sheets (of sufficient quality). The exercises deepen the understanding of concepts and empirical methods taught in the lecture and apply it to specific cases.	6 C

Examination requirements: The students demonstrate a good understanding of key theories and models of economic development. They are able to critically present these theories and models, are able to interpret empirical results that relate to these models, and are able to crucially draw relevant policy conclusions coming out of these models and empirical assessments.	

Admission requirements: None	**Recommended previous knowledge:** Knowledge of macroeconomics and econometrics at BA level is highly desirable.
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students:	

not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0009: Development Economics II: Micro Issues in Development Economics**	6 C 4 WLH

Learning outcome, core skills: After successful completion, students will be able to understand poverty in developing countries, including its measurement and key determinants. They can explain the linkages between poverty, hunger, gender inequality, and fertility. They can analyze how market failures in markets for land, labor, capital and insurance can trap households in poverty, and derive appropriate policy recommendations to tackle these poverty traps. They can use regression analysis and impact evaluation methods to assess determinants of poverty and ways to overcome it.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Development Economics II (Lecture)	2 WLH
Course: Development Economics II (Exercise)	2 WLH
Examination: Term Paper (max. 5 pages)	3 C
Examination: Oral Presentation (approx. 20 minutes)	2 C
Examination: Essay in the form of a policy brief (max. 2 pages)	1 C

Examination requirements: The students demonstrate a good understanding of poverty, its measurement and determinants in developing countries. They are able to critically present theories and models of market failures for land, labor, capital and insurance markets that can trap households in poverty , are able to interpret empirical results that relate to these models, and are able to crucially draw relevant policy conclusions coming out of these models and empirical assessments.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of microeconomics and econometrics at BA level is highly desirable. Development Economics I is not a prerequisite.
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0019: Advanced Development Economics**	6 C 3 WLH

Learning outcome, core skills: By end of this course, the students will be familiar with cutting edge theoretical and empirical research in development economics. To achieve that, the course will acquaint students with the state of the art in modern development economics. The topics covered will vary from time to time, always focusing on new and emerging issues in development economics research.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Advanced Development Economics (Lecture) *Contents*: The students will analyze cutting edge research in development economics. The topics covered will vary from time to time, always focusing on new and emerging issues in development economics research.	2 WLH
Course: Advanced Development Economics (Exercise) *Contents*: In the exercise session, students will deepen their understanding of concepts used in the lecture, present and discuss relevant literature, and apply concepts and methods developed in the lecture.	1 WLH
Examination: Presentation (approx. 20 minutes) of an academic article that is assigned to the students **Examination requirements:** With the student presentation, students are expected to demonstrate their ability to synthesize, present and discuss academic research results for an academic audience.	2 C
Examination: One essay (max. 4 pages) in the form of a referee report on an article that is assigned to the students **Examination requirements:** By writing a referee report, students demonstrate their ability to interpret cutting edge research in development economics, including critically evaluating models, theories, and econometric techniques.	4 C

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-VWL.0008 Development Economics I: Macro Issues and M.WIWI-VWL.0009: Development Economics II Micro Issues in Development Economics or equivalent, knowledge of MA level econometrics plus good knowledge of MA level development economics highly desirable.
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 4
Maximum number of students: 25	

Additional notes and regulations:
The limitation of the maximum number of students is based on the seminar character of the course, e.g. the performance of a presentation as an examination per participating people.

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0021: Gender and Development**	6 C 3 WLH

Learning outcome, core skills: Allow students to understand key theoretical and empirical approaches to understanding gender inequality in developing countries, including gender gaps in education, health and mortality, employment, time-use, and governance. Familiarize students with different approaches to conceptualize and measure gender gaps and enable them to analyze policies to tackle gender inequality.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Gender and Development (Lecture) *Contents*: In the lecture the students will discuss the different mechanism behind gender based inequality. , including gender gaps in education, health and mortality, employment, time-use, and governance. It will familiarize students with different approaches to conceptualize and measure gender gaps and enable them to analyze policies to tackle gender inequality	2 WLH
Course: Gender and Development (Tutorial) *Contents*: The tutorial is used to deepen understanding of concepts used in the lecture, discuss relevant literature, and apply concepts and methods developed in the lecture.	1 WLH
Examination: Written examination (90 minutes) or term Paper (max. 15 pages)	6 C

Examination requirements: In the term paper, students demonstrate their ability to develop a coherent argument on a particular issue of gender inequality in developing countries. In the exam, students demonstrate their ability to understand theory and empirical assessments of gender inequality, including measurement, and policy issues.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of development economics (at least at BA level, but preferably at MA level) also recommended (e.g. taking Development Economics I or II concurrently)
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0024: Seminar on the Economic Situation of Latin America in the 21st Century: 'Challenges of Economic Development in Latin America'**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the module students are able to name and explain the most important structural problems and challenges in Latin America (LA).They are able to identify economic deficiencies in LA and compare them with shortcomings in other countries, to evaluate the policy mix applied in LA and to suggest ways on how to improve policy interventions. **Competencies:** • students learn how to formulate research questions, • students have a close look at theoretical studies/arguments in related field, • students familiarize with the empirical literature in related field, • students utilize the empirical methodology to evaluate the results obtained in the empirical literature, • students give reasons why theory and empirics are compatible or not, • students draw economic policy conclusions from empirical results.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar on the Situation in Latin America in the 21st Century: Structural Problems, Crises and the Necessity of Reforms (Seminar) *Contents*: In this course structural problems and issues, such as • over-indebtedness, • dependence on development aid, remittances and international loans, • economic vulnerability (resource dependence, low degree of diversifation, small manufacturing sector), • weak institutions, • lack of job opportunities, • challenges of migration, • global developments and their impact on Latin American economies will be dealt with.	2 WLH
Examination: Presentation (approx. 20 min) with written elaboration (max. 15 pages text) **Examination prerequisites:** Regular active attendance.	6 C

Examination requirements: • Students are able to identify structural and other deep-rooted problems in developing countries, • students are able to describe, analyze and assess the challenges related to crisis management in developing countries,	

• students are able to describe, analyze and assess the challenges of policy reform and resistance against it, • students are able to describe, analyze and assess the challenges related to global developments, such as migration, financial crisis etc.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of open economy macroeconomics, of development economics; of econometrics e. g. (Econometrics I), ability to apply textbook knowledge to problems of today's economies, ability of analyze structural problems
Language: English	**Person responsible for module:** Dr. rer. pol. Felicitas Nowak-Lehmann
Course frequency: every winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0025: Seminar Development Economics IV**	6 C 2 WLH

Learning outcome, core skills: Students learn how to work through cutting edge research on a particular issue in development economics, develop a coherent argument addressing their research question, improve their academic writing, and learn how to present such work in front of an academic audience.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Development Economics IV (Seminar)	2 WLH
Examination: Presentation (approx. 30 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: In the paper, students demonstrate their ability to critically review academic studies on a particular topic, able to synthesize the results and develop a clear argument backed by the evidence in the literature. They also demonstrate their ability to research the scientific literature, and write a scientific paper. In the presentation, they demonstrate their ability to present key insights from complex theoretical and empirical papers, and to present and defend an argument on the research question developed from the literature.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0035: Economic Effects of Regional Integration**	6 C 2 WLH

Learning outcome, core skills: Students learn how to formulate research questions. They are expected to provide a critical assessment of the theoretical studies/arguments in the related field and to review the related empirical literature. Students also learn how to apply the empirical methodology to evaluate the results obtained in the empirical literature, provide some reasons why theory is confirmed or not with empirics and draw economic policy conclusions from empirical results.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Economic Effects of Regional Integration (Seminar) *Contents*: • Regionalism versus Multilateralism in the World Economy • European Integration: EU, MU, East Enlargement • Latin American Integration • Asian Regionalism • African Integration	
Examination: Presentation (ca. 20 min.) with written elaboration (max. 15 pages text) **Examination prerequisites:** Regular active attendance.	6 C

Admission requirements: none	**Recommended previous knowledge:** International economics and basic knowledge in econometrics
Language: English	**Person responsible for module:** Prof. Dr. Inmaculada Martinez-Zarzoso
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 18	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0040: Empirical Trade Issues**	6 C 3 WLH

Learning outcome, core skills:	**Workload:**
This course is intended to cast light on present-day controversies in international trade through assessment of the latest empirical analysis of a number of important topics of international trade research. The main aim is to improve students' ability to evaluate and to undertake empirical research in international trade. All readers are expected to have completed graduate courses in microeconomics and econometrics. The course is organized along five empirical questions: 1. What do countries trade? 2. Why has trade increased so much? 3. Why do we still trade so little? 4. Did globalization contribute to the rise in inequality? 5. Does trade increase productivity? We will learn the necessary modeling tools and empirical instruments that help answer these questions. The course is also concerned with the *application* of econometric methods to assess trade policies and its economic effects. The computer software package STATA will be used for practical work. Previous knowledge of intermediate econometrics is required.	Attendance time: 42 h Self-study time: 138 h

Course: Empirical Trade Issues (Lecture) *Contents*: *Comparative Advantage, Trade Flows and Trade Policies* 1. Quantifying trade flows 1.1 Openness: measurement issues 1.2 Trade composition: At the sectoral and geographical level 1.3 Analysing trade flows, comparative advantage and terms of trade 1.4 Analysing regional trade: Trade intensity and trade complementarity 1.5 Main trade databases 2. Trade Policies 2.1 Tariffs under WTO 2.2 Import tariffs: Measurement issues and data 2.3 Non tariff barriers: Price gaps and coverage ratios 2.4 Trade policies and practices 3. The distributional Effects of Trade Policies 3.1 Transmission of tariff changes 3.2 Linking trade policy to household welfare	2 WLH

3.3 Combining survey data and trade policy data 3.4 Empirical applications *Testing New and New-New Trade Theories* 4. The gravity model of trade 4.1 The gravity equation: Theoretical foundations 4.2 Estimation methods 4.3 Advanced gravity modelling issues 4.4 Empirical applications 5. Heterogeneous firms and trade 5.1 Trade and Firm's Productivity 5.2 Stylized Empirical Facts 5.3 The Melitz Model. Key Implications 5.4 Empirical Applications: Testing the Predictions *Globalization, Regional Integration and its effects* 6. Trade and Regional Integration 6.1 Regional versus Multilateral Trade Liberalization 6.2 Economic Effects of Regionalism 6.3 Evidence on the Trade Effects of Regional Agreements 6.4 Impact of Trade Preferences	
Course: Empirical Trade Issues (Tutorial) *Contents*: The computer software package STATA will be used for practical work to learn how to apply it to perform trade policy analysis.	1 WLH
Examination: Term Paper (max. 10 pages, based on the tutorial) **Examination requirements:** Students are required to write a term paper based on an empirical application using Stata.	2 C
Examination: Written examination (90 minutes) **Examination requirements:** • Show a deep knowledge of the trade theories, policies and empirical trade models covered in the course • Show ability to explain the implications of trade theories and whether they apply to the world economy • Understanding of the economic logic behind trade policies and its economic effects • Being able to interpret tables of empirical results available in published economic research	4 C

Examination requirements:	

• Show a deep knowledge of the trade theories, policies and empirical trade models covered in the course, • show ability to explain the implications of trade theories and whether they apply to the world economy, • understanding of the economic logic behind trade policies and its economic effects, • being able to interpret tables of empirical results available in published economic research.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I and International Economics
Language: English	**Person responsible for module:** Prof. Dr. Inmaculada Martinez-Zarzoso
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0041: Panel Data Econometrics**	6 C 4 WLH

Learning outcome, core skills: • This course aims to study panel data econometric techniques in an intuitive and practical way and to provide the skills and understanding to read and evaluate empirical literature and to carry out empirical research. Empirical evaluation of economic models is an important feature of the study and application of economics. • The course is concerned with the *application* of econometric methods, with little emphasis on the mathematical aspects of the subject (which may be studied in other modules). The computer software package STATA will be used for practical work. Previous knowledge of intermediate econometrics is required.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Panel Data Econometrics (Lecture) *Contents*: *Linear Panel Data Models* 1. Static Linear Panel Data Models 1.1 Introduction to Panel Data 1.2 Assumptions 1.3 Estimation and Testing *1.3.1 Pooled OLS* *1.3.2 Random Effects Estimation* *1.3.3 Fixed Effects Estimation. Testing for Serial Correlation* *1.3.4 First-Differencing Estimation* 1.4. Comparison of Estimators and Testing the Assumptions 1.5 Correlated Random Effects (CRE) or Mundlak's Approach 2. Endogeneity and Dynamics in Linear Panel Data Models 2.1. Equivalence Between GMM 3SLS and Standard Estimators 2.2 Chamberlain's Approach to UE Models 2.3. RE and FE Instrumental Variables Methods 2.4. Hausman and Taylor Models 2.5. First Differencing and IV 2.6. Dynamic Panel Data Models. Estimation under Sequential Exogeneity 3. Special Topics 3.1 Heterogeneous Panels 3.2 Random Trend Models 3.3 General Models with Specific Slopes	2 WLH

3.4 Robustness of Standard Fixed Effects Estimators 3.5 Testing for Correlated Random Slopes *Non-linear Panel Data Models* 4. Panel Data Models for Discrete Variables 4.1 Introduction. Binary Response Panel Data Models with Strictly Exogenous Variables 4.2 Linear Probability Model 4.3 Fixed versus Random Effects 4.4 Other issues: Endogenous explanatory variables/Selection Bias The course is organized as a series of lectures complemented with tutorials.	
Course: Panel Data Econometrics (Tutorial) *Contents*: The computer software package STATA will be used for practical work.	2 WLH
Examination: Term Paper (max. 10 pages, based on the tutorial)	2 C
Examination: Written examination (120 minutes)	4 C

Examination requirements: • Show a deep knowledge of the econometric techniques covered in the course • Show ability to select the adequate econometric model for a give economic empirical application • Understanding of the economic logic behind the panel data models introduced in the course • Being able to interpret tables of empirical results available in published economic research

Admission requirements: none	**Recommended previous knowledge:** Previous knowledge of intermediate econometrics is required.
Language: English	**Person responsible for module:** Prof. Dr. Inmaculada Martinez-Zarzoso
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0042: European Economy**	6 C 4 WLH

Learning outcome, core skills:
The key learning objectives are:

- students should understand the extent of economic integration in the EU and the basics of EU law and its basic institutional structure and economic facts about European nations. Students should also learn the broad outline of the EU budget on the receipts and expenditure side and the basic content and the structure and problems with the Constitutional Treaty and the subsequent Treaty of reform,
- acquire knowledge of the standard open-economic supply and demand diagrams and how they can be used to analyze the positive and normative impact of tariffs. Students should also learn about the various types of trade barriers that can constrain trade,
- learn to apply open-economy supply and demand analysis to a three country setting with the aim of illustrating the main positive and normative effects of preferential liberalization on aspects of European integration. Students should also learn about the differences between customs unions and free trade areas and about WTO disciplines and about the nature of empirical studies into the effects of EU market integration,
- learn the economics behind the notion that integrating European markets can improve economic efficiency by giving European firms better access to a wider market. As part of this, students learn about market interactions in the presence of imperfect competition and increasing returns,
- learn the economic logic that explains how integrating European markets can increase income growth rates in the medium term and in the long term and the specific features of Europe's labour markets and key labour economics principles. Students should also learn about the sources of unemployment and the microeconomics of labour market integration and the conflict between efficiency and social imperatives, as well as understand the impact of economic integration and migration on labour markets,
- learn about the CAP, which is by far the most important policy in terms of the budget and it is one of the most important in terms of EU politics. Students should also learn about recent reforms to the CAP based on de-coupling,
- learn about the very uneven distribution of economic activity in Europe and about the economics that helps account for this result as well as using the suitable framework for understanding how deeper integration affects the distribution. Also learn about EU regional policy, essentially designed to prevent geographic concentration or to ameliorate its effects on people living in rural areas,
- acquire Knowledge of the basic facts of the EU's trade pattern both in terms of partners and commodity composition and become familiar with the basic institutions of EU trade policy making and acquire a basic understanding of the EU's external trade policy.

Workload:
Attendance time:
28 h
Self-study time:
152 h

Course: European Economy (Lecture)	2 WLH

Contents:
The course is organized as a series of lectures complemented with tutorials and student presentations of selected topics.

Introduction

1. The European Integration Process in the World Economy

    1.1 History

    1.2 Facts, Institutions and Laws

    1.3 The Budget

    1.4 The Constitutional Treaty

Microeconomics of European Integration

2. Economic Effects of Forming a Customs Union I: Static Effects

    2.1 Microeconomic Tools

    2.2 Static Effects: Trade Creation and Trade Diversion

    2.3 WTO Rules

    2.4 Evaluation of the Static Effects

3. Economic Effects of Forming a Customs Union II: Market size and Scale Effects

    3.1 Dynamic Effects

    3.2 Market Structure and Scale Effects

    3.3 Evaluation of the Dynamic Effects

4. The Single Market Process: Growth Effects

    4.1 Economic Impact of the Single Market: Growth Effects

    4.2 Free Factor Movement inside the Internal Market: Labour Markets and Migration

    4.3 Effects of Integration

EU Selected Policies

5. EU Environmental Policy

    5.1 History of the Policy Strategies

    5.2 Objectives, Targets and Timetables

    5.3 The “new” Environmental Policy of the EU

    5.4 Role of Product Standards

6. Innovation Patterns and the EU Regional Policy

    6.1 The Facts

    6.2 Innovation Patterns

    6.3 EU Regional Policies

    6.4 Empirical Evidence

7. Trade Policy

7.1 Basic Trade Policy Analysis 7.2 Economics of Preferential Liberalization 7.3 Market Size and Scale Economies A key starting point is the official site:http://www.europa.eu.int.	
Course: European Economy (Tutorial) *Contents*: Presentation and discussion of the term papers.	2 WLH
Examination: Term paper (max. 10 pages text) **Examination prerequisites:** Regular attendance, Presentation of the term paper	2 C
Examination: Written examination (90 minutes)	4 C

Examination requirements: • Show a deep knowledge of the European integration process, its history and evolution over time • Show ability to draw open-economic supply and demand diagrams and how they can be used to analyze the positive and normative impact of tariffs • Understanding of the economic logic that explains how integrating European markets can increase income growth rates in the medium term and in the long term • Show a profound knowledge of the European economic policies and its economic effects

Admission requirements: none	**Recommended previous knowledge:** Introductory macroeconomics and microeconomics
Language: English	**Person responsible for module:** Prof. Dr. Inmaculada Martinez-Zarzoso
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0046: Topics in European and Global Trade**	6 C 2 WLH

Learning outcome, core skills: The key learning objectives are: • Students should learn how to formulate research questions. • They are expected to provide a critical assessment of the theoretical studies/ arguments in the related field and to review the related empirical literature. • Students should also learn how to apply the empirical methodology to evaluate the results obtained in the empirical literature. • They should also provide some reasons why theory is confirmed or not with empirics and draw economic policy conclusions from the empirical results.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Topics in European and Global Trade (Seminar) *Contents*: Topic 1: Institutional Quality, Trade and Growth Topic 2: Aid for Trade, Foreign Aid and Trade Link Topic 3: Trade Facilitation Topic 4: Trade Agreements Topic 5: Trade and the Environment Topic 6: Technology Transfer and Trade Topic 7: Gender Inequality and Trade Topic 8: Trade, income per Capita and Inequality Topic 9: Trade and Transport Costs Topic 10: Trade and Exchange Rate Regimes Topic 11: Exchange Rate Volatility and Trade Topic 12: Financial Integration and Trade Topic 13: Trade and Conflicts Topic 14: The Extensive and the Intensive Margins of Trade Topic 15: Product Quality and Trade Topic 16: Trade and Migration Topic 17: Geographical Frictions Topic 18: Value Added Trade and International Production Chains Topic 19: Common Currency Effects on Trade Topic 20: Trade and Uncertaint	2 WLH
Examination: Term paper (max. 15 pages text) with presentation (ca. 20 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: • Written paper: Students are expected to develop a research question, to summarize key findings from theoretical and empirical research in relation to it and to critically assess and compare methods and models in relation to the main results found in the related literature. • Oral Presentation: Ability to present and explain with clarity economic theories and empirical methods and describe tables of results with a deep understanding of the research question addressed in the written paper.	

Admission requirements: none	**Recommended previous knowledge:** Empirical Trade Issues or International Trade and Econometrics I
Language: English	**Person responsible for module:** Prof. Dr. Inmaculada Martinez-Zarzoso
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0054: Behavioral Game Theory**	6 C 4 WLH

Learning outcome, core skills: At the end of this course, students will have a clear understanding of: • the methodology of experimental economics, • the range of questions that can be analyzed in economic experiments, • various experimental paradigms and related stylized facts, • the practical issues involved in the design and running of economic experiments, • how to analyze data generated from economic experiments, • how to write a project proposal.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Behavioral Game Theory (Lecture) *Contents*: The course will start with an introduction into the methodology of experimental economis, illustrated by a varied range of economic experiments that were designed to explore individual and group behavior in economic games. The introduction will also cover the elicitation of economic preferences as well as basic statistical techniques for the analysis of experimental data. In the second part of the course, participants will work in groups: they identify a topic for further experimental investigation, develop a full-fledged experimental design to explore and understand this topic, and present it orally in class. Potentially, a pilot study might be carried out.	2 WLH
Course: Behavioral Game Theory (Exercise) *Contents*: In the first part, exercises will consist in taking part in and/or reading seminal papers on various economic experiments. These experiments will be chosen to introduce the students into a small number of specific topics to be focused on in each semester. For each experiment, participants will critically discuss fundamental aspects, potential shortcomings as well as conceivable further applications of its specific design and how its results relate to those of similar experiments to be found in the literature. In the second part, participants will be accompanied in the elaboration of an experimental research question and the design of an experiment, including the derivation of hypotheses to be tested and the statistical approach.	2 WLH
Examination: Individual essay based on group work (Group work 2-5 people, max 15 pages) **Examination prerequisites:** Written examination (90 minutes, after first part)	6 C

Examination requirements: **Written examination** Demonstrate knowledge of: • the basic experimental paradigms discussed in the course,	

- the mathematical methods for analyzing individual decisions and social interaction in those paradigms,
- and related stylized behavioral economics results.

Essay

Describe:

- motivation and goal of the research project,
- related literature,
- precise research question and the specific experimental design, how it relates to existing experiments, theoretical considerations and derivation of testable hypotheses,
- experiment instructions.

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0065: Economics of Crime**	6 C 4 WLH

Learning outcome, core skills: Students will learn the theoretical and empirical framework necessary to understand the drivers of criminal participation and evaluate policies to deal with it. Students will acquire the knowledge to understand how non-monetary factors affect human behavior. Students will have the opportunity to develop a case study where they can apply the knowledge acquire in the course to analyze different dimension of crime.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economics of Crime (Seminar) This course presents a behavioral perspective to the economic model of crime. We discuss how different disciplines have understood criminal participation and consider how to model empirically the decision to engage into crime.	4 WLH
Examination: Term paper (max. 15 pages text) with presentation (ca. 20 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: The term paper should be written on a topic related with economics of crime. Students should be able to present a theoretical model to conceptualize the problem they want to investigate, derive an extension of an existing model and make predictions on how economic and non-economic factors affect behavior. Students should be able to understand the empirical limitations and problems on the empirical estimation of the model of crime and be able to discuss how limitations could be addressed.	

Admission requirements: none	**Recommended previous knowledge:** Microeonomics, Macroeconomics, Statistics, Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0083: Economic Reform and Social Justice in India**	6 C 3 WLH

Learning outcome, core skills: The course will equip students with an in-depth understanding of economic, social, and political challenges and reforms in contemporary India. Students will further be introduced to empirical methods for evaluating the impact of reforms and policies and will gain skills to critically appraise such empirical work. By the end of the course, students will be able to: • give an overview of reform policies in India and their impact on general development, politics, and the wider society, • give an overview of current empirical debates on these topics, • critically assess empirical work.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Economic Reform and Social Justice in India (Seminar) *Contents*: The course will introduce students to economic, social, and political aspects of contemporary India. Policies and reforms in each of these domains are presented and assessed. For this purpose, influential empirical analyses are discussed and critically appraised. The course will cover the following topics with a focus on India: • Economic Development, • Politics and Corruption, • Education, • Health and Nutrition, • Markets and Productivity, • Finance, • Gender.	2 WLH
Course: Economic Reform and Social Justice in India (Exercise) *Contents*: In tutorials, students will learn to replicate selected empirical papers, revise research designs and statistical methods in more depth and practice their scientific writing.	1 WLH
Examination: Portfolio (max. 15 pages)	3 C
Examination: Oral Presentation (approx. 60 minutes)	3 C

Examination requirements: • Familiarity with major economic policy debates in India, • demonstrate an ability to link the practice with economic theory, • ability to reflect on various policy actions and their implications.	

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 18	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0086: Macroeconomics of Open Economies**	6 C 4 WLH

Learning outcome, core skills: After a successful participation, students have a deep understanding of core concepts in international macroeconomics including current account determination, international capital flows, global imbalances, exchange rate determination, and sovereign debt. They familiarize themselves with the standard two-period dynamic model of international macro and apply it to understand phenomena like twin deficits, aggregate demand shocks, sudden stops, and the European balance of payment crisis. Students learn to critically assess the pros and cons of fix and flexible exchange rates, and the effects of capital account liberalization on economic development.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Macroeconomics of Open Economies (Lecture) *Contents*: • The Balance of Payments • Current Account Determination • External Adjustment in Small and Large Economies • Twin Deficits: Fiscal and Current Account Imbalances • Sovereign Debt • International Capital Market Integration • Financial Development and Global Imbalances • Capital Account Liberalization and Growth • Determinants of the Real Exchange Rate • Aggregate Demand Shocks and Real Exchange Rates • Exchange Rate Policy and Unemployment • The European Balance of Payments Crisis • Monetary Policy and Exchange Rate Determination	2 WLH
Course: Macroeconomics of Open Economies (Tutorial) *Contents*: In the accompanying tutorials, students should discuss and solve problem sets to deepen and broaden their knowledge of the topics covered in the lectures	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Demonstrate: • a profound knowledge of the two-period dynamic general equilibrium model and the ability to apply it to different problems in international macro • a deep understanding of the mechanisms behind current account imbalances, exchange rate movements, and sovereign debt • the ability to solve problems in a verbal, graphical and analytical manner	

Admission requirements: none	**Recommended previous knowledge:** Macroeconomics, Mathematics for Economists, Econometrics as taught in the Bachelor courses

Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik
Course frequency: once a year	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0092: International Trade**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students should be able to: • give an overview of the core theoretical concepts explaining international trade patterns by means of various sources of trade flows like different technologies or factor endowments. • understand and apply the concepts of comparative and absolute advantage. • analyze the effects of international trade on the trading partners with respect to (i) their production and overall welfare, (ii) the reallocation of resources in the production process, (iii) the change in nominal factor prices, and (iv) on changes in the purchasing power of consumers. • evaluate and critically reflect the gains and losses of international trade. • evaluate the consequences of different trade policies like tariffs and subsidies. • understand, summarize, and critically assess recent approaches to explain international trade patterns that are observed today based on scientific publications.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: International Trade (Lecture) *Contents*: 1. Introduction to International Trade 2. The Ricardian model Graphical and mathematical analysis of trade effects on changes production and consumption, nominal and real wages. Evaluation of empirical relevance by means of case studies. 3. The specific-factors model Graphical and mathematical analysis of trade effects on changes in production and consumption, nominal and real factor prices. Evaluation of empirical relevance by means of case studies. 4. The Heckscher-Ohlin model Graphical and mathematical analysis of trade effects on changes in production and consumption, nominal and real factor prices. Evaluation of empirical relevance by means of case studies. 5. Testing Trade Theory Mathematical derivation of the factor content of trade by means of the Heckscher-Ohlin-Vanek model. Empirical tests of the HOV model. Modelling different technologies across countries. 6. Movements of factors Graphical and mathematical analysis of short-run and long-run effects of migration and FDI. Empirical relevance by means of case studies.	2 WLH

7. The Krugman model of monopolistic competition an increasing returns to scale and the Gravity equation /New trade theory. Graphical analysis of short- and long-run effects of trade under monopolistic competition. Comparative statics in Krugman's equilibrium model. 8. Project work: trade policy, recent explanations of trade patterns within the frame of student presentations	
Course: International Trade (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a profound knowledge of the core theoretical concepts in international trade. • Show the ability to analyze the welfare and distributional effects of international trade by means of graphical and mathematical tools. • Show the ability to analyze the effects of trade policies. • Students should be able to assess the theoretical models with respect to empirical applications.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0095: International Political Economy**	6 C 4 WLH

Learning outcome, core skills: After a successful participation, students have a deep understanding of the political mechanism at the country level and at the international level that lead to certain outcomes of international policy making. They familiarize themselves with models of public choice theory (on voting, lobbying, alliance formation) and apply them to international problems. Students learn to understand the logic of trade wars, trade negotiations, and customs areas and their implications for economic welfare. They learn to critically assess the pros and cons of globalization and to identify its impact on different groups in society.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: International Political Economy (Lecture) *Contents*: • Direct and Representative Democracy • Voting in International Organizations • Lobbying • Collective Action • Economics of Alliances • Trade Wars • Trade Negotiations • GATT and WTO • Custom Unions • Free Trade Areas and the EU • Protection for Sale • Globalization	2 WLH
Course: International Political Economy (Tutorial) *Contents*: In the accompanying tutorials, students should discuss and solve problem sets to deepen and broaden their knowledge of the topics covered in the lectures.	2 WLH
Examination: Oral exam (ca. 20 minutes) or written examination (90 minutes)	6 C

Examination requirements: Demonstrate: • a profound knowledge of the tools of public choice and game theory to understand international policy outcomes • a deep understanding of the political mechanisms of international policy making • the ability to solve problems in a verbal, graphical and analytical manner	

Admission requirements: none	**Recommended previous knowledge:** Mathematics for Economists as taught in the Bachelor courses M.WIWI-VWL.0092 International Trade
Language:	**Person responsible for module:**

English	Prof. Dr. Holger Strulik
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0096: Essentials of Global Health**	6 C 3 WLH

Learning outcome, core skills: The goal of this course is to provide students with a comprehensive understanding of global health. By the end of the course, students will be able to: • explain main concepts of global health • describe linkages between health and economic development • describe determinants of health • describe different components of health systems • demonstrate familiarity with the concept of burden of disease and risk factors and how health status is measured • describe key measures to address the burden of disease in cost-effective ways • read, discuss and present recent scientific literature in the global health field • write a clear and concise policy brief tailored to a specific audience	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Essentials of Global Health (Seminar) *Contents*: The course will introduce students to the main concepts of the public health field and critical links between global health and economic development. Students will get an overview of the determinants of health and learn how health status is measured. The course will be global in coverage, but with a focus on low- and middle-income countries and on the health of the poor. The course will cover: • Global health concepts • Linkages between health and development • Global burden of disease, measurement and global trends • Determinants of health and social network effects • Health disparities • Health systems • Global health efforts • Health behaviour in developing countries	2 WLH
Course: Essentials of Global Health (Exercise) *Contents*: Practical exercises related to the topics discussed in the seminar give students the opportunity to deepen and enhance their understanding of the seminar's content.	1 WLH
Examination: Portfolio* (max. 15 pages) **Examination requirements:** In their portfolio, students should demonstrate their familiarity with key concepts and topics discussed in the lecture as well as an ability to critically discuss these topics by completing various assignments related to particular seminar contents. In addition, students will be expected to have read the background literature mentioned in the course.	3 C
Examination: Oral Presentation (approx. 60 minutes)	3 C

Examination requirements: Students will present current research articles in global health and demonstrate an understanding of the main concepts of global health and their linkages with economic development. Students will be further required to demonstrate skills to critically discuss scientific articles.	

Admission requirements: none	**Recommended previous knowledge:** Basics in microeconomics and macroeconomics, understanding of econometrics, ability to read scientific articles
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 18	

Additional notes and regulations:
* A portfolio is a collection of the following assignments related to particular seminar contents: summaries of a text, response papers, reading reports and comments on presentations (max. 15 pages).

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0099: Poverty & Inequality**	6 C 3 WLH

Learning outcome, core skills: The goal of this course is to provide students with a general understanding of poverty, inequality, and related economic issues. By the end of the course, students will be able to: • describe concepts of poverty and inequality, • describe drivers of poverty and inequality, • describe interlinkages between poverty, inequality, and socio-economic outcomes, • discuss development policy targeting poverty and inequality, • calculate measures of poverty and inequality.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Poverty & Inequality (Lecture) *Contents*: This course provides an in-depth analysis of inequality, poverty and related economic issues at the graduate level. The course covers • theories of justice, • methodological aspects of poverty and inequality measurement, • global aspects of poverty and inequality, • effects of inequality on socio-economic outcomes and growth, • gender inequalities, • inequality and poverty in rich countries, • development policy targeting poverty.	2 WLH
Course: Poverty & Inequality (Tutorial) *Contents*: The tutorial provides practical skills in poverty and inequality measurement. It includes lab sessions where poverty and inequality measures are calculated using statistical software (Stata).	1 WLH
Examination: Written examination (90 minutes) **Examination requirements:** Demonstrating skills related to the measurement of poverty and inequality. Demonstrating an understanding of the concepts, drivers and consequences of poverty and inequality and their interlinkages based on the most recent scientific literature.	4 C
Examination: Practical examination (max. 5 pages) **Examination requirements:** Application of theoretical concepts to measure poverty and inequality using real data from developing countries and statistical software (Stata).	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer

Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0101: Theory and Politics of International Taxation**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the course students will have the following competencies: • knowledge of the basic institutional rules governing the taxation of international income flows, • understanding how these rules affect the efficient international allocation of capital and savings, • knowledge of some instruments used by multinational corporations for shifting profits, and assess the policy measures proposed by the OECD and the EU to limit erosion of tax bases, • understanding the possibilities and limitations of intergovernmental co-ordination of tax policies, • participants will learn to explain the impact of international taxation on economic decisions verbally and graphically, • they will be able to analyze problems in international taxation by solving simple theoretical models, • they will learn how to discuss international co-ordination of tax policy from a scientific background.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Theory and Politics of International Taxation (Lecture) *Contents*: 1. Basics of international taxation Introduction into the principles of international taxation and the methods to avoid double taxation. Description of EU directives concerning taxation of cross-border income flows. 2. Worldwide efficiency of capital income taxation Analytical derivation of efficiency conditions for capital and savings (capital export and capital import neutrality) with reference to the methods to avoid double taxation. 3. Optimal taxes in a small open economy Analysis of capital income taxation in source and residence countries. Examination of other tax bases and empirical studies on taxation effects. 4. Profit shifting Introduction into the basics of profit shifting by multinational corporations induced by international differences in taxation and analysis of transfer prices from the firm's and the state's perspective. Analysis of debt finance and intangible assets as means to shift profits. Measures by the OECD and the EU to counter base erosion by profit shifting. 5. Co-ordination of profit taxation in the European Union Introduction into the proposals of the European Commission regarding a Common Consolidated Corporate Tax Base and analysis of CCCTB's effects on companies' decisions, tax revenues and tax competition.	2 WLH
Course: Theory and Politics of International Taxation (Exercise) *Contents*:	2 WLH

The tutorial accompanies the lecture with exercises and revision.	
Examination: Written examination (90 minutes)	6 C

Examination requirements: Participants are required to show their understanding of the principles of international taxation, the allocation and incidence effects of taxation of internationally mobile factors and goods, the causes and effects of tax motivated profit shifting as well as the co-ordination of tax policies in the European Union.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of theory of taxation and institutions of international taxation
Language: English	**Person responsible for module:** Prof. Dr. Robert Schwager
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0105: Controversies in Development Economics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course students will be able to: • understand some of the key analytical and topical controversies in development economics, • understand the analytical – both theoretical and empirical – tools and models that are applied in regard to these controversies, • critically assess the relevance and validity of these tools and models, • critically evaluate the potential development impacts of policies relevant in specific policy fields, • use these analytical foundations to develop a convincing written and spoken argument.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Controversies in Development Economics (Seminar) *Contents*: The seminar addresses controversial issues in development economics. Such issues may be more topical (for example: Investments in agriculture and land: Land grab or development opportunity?) or more analytical (for example: The role of the state in economic development: Market-led development or interventionist models?). Based on the seminar papers, which will take a balanced stance toward a specific controversy, students will prepare a presentation that assumes a one-sided position during the seminar. Moderated discussions between two positions will be preceded and followed by a vote of the entire group to assess how convincing the respective presenter has made his or her argument. The seminar topics are subject to change every term. Additional (potential) selected issues include, but are not limited to the following: • EU-ACP economic partnership agreements: (A) new modes of explotation for (B) a genuine opportunity for export-led development? (KT) • the Marshall Plan with Africa: (A) finally a partnership at eye level or (B) another plan for Africa (and the desk drawer)? • fairt trade: (A) fair deal or (B) just calming our bad conscience: is fair trade promoting development? • climate change mitigation and economic development: (A) trade-off or (B) win-win situation? • the sustainable development goals: (A) a great step towards a sustainability transfomration or (B) just cheap talk and no action? • does aid do more harm than good? (A) yes or (B) no? • randomistas versus poor development economists: (A) RCTs as the gold standard of development economics or (B) misguided certainty? • the role of instustrial policy in economic development: (A) comparative-advantage-conforming or (B) comparative-advantage-defying strategy? • how to achieve development: (A) small beautiful projects or (B) big development plans?	2 WLH

Examination: Presentation (approx. 30 minutes) with written elaboration (max. 10 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: In the paper, students demonstrate their ability to critically review academic studies on a particular topic, show their ability to synthesize the results and develop a clear argument backed by the evidence in the literature. They also demonstrate their ability to judge the quality and relevance of research on the topic, structure the theoretical and empirical insights from the literature, and, accordingly, write an own scientific paper that comprises policy implications. In the presentation, they demonstrate their ability to develop a coherent argument using key insights from their seminar papers. They are also able to discuss the topics with their fellow students.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in macroeconomics, microeconomics and growth and development
Language: English	**Person responsible for module:** apl. Prof. Dr. Jann Lay
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0112: Financial Markets and the Macroeconomy**	6 C 2 WLH

Learning outcome, core skills: Students acquire knowledge about the role of international financial markets for the macroeconomy. Further, students apply their statistical and econometric knowledge to relevant economic questions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Financial Markets and the Macroeconomy (Seminar) *Contents*: The seminar focuses on the interdependences between financial markets and the macroeconomy. Motivated by the Great Recession, we discuss various channels through which financial markets may have an effect on real macroeconomic variables. Further, the international dimension of financial markets is highlighted, by discussing international transmission channels of financial shocks.	2 WLH
Examination: Presentation (approx. 20 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Scientific paper and solid presentation skills	

Admission requirements: none	**Recommended previous knowledge:** Basic econometrics and knowledge of open economy macroeconomics
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: every winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0113: Macroeconometrics**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students should be able to: • differentiate between existing econometric techniques in the area of international finance and macroeconomics. • apply these models in order to answer specific research questions. • work with real world data using acquired programming skills in MATLAB. • check for robustness of their results by applying statistical testing procedures. • present the result of their research and argue about its validity.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Macroeconometrics (Lecture) *Contents*: 1. Revision of basic econometrics. Characteristics of data, which requires certain econometric modeling Simple and multiple regression models as a tool for examining economic theory. Least squares estimation, its assumptions, properties and usage. 2. Univariate time series models ARMA class models to investigate properties of macroeconomic andfinancial data. Box-Jenkins approach and its components for a highgrade regression analysis. Various forecasting techniques used in time series modelling. 3. Stationary and non-stationary data The concept of stationarity and its importance in econometrics. Several test procedures that are used to avoid risks related to working with nonstationary data. Stochastic and deterministic trends as well as ways to stationarize time series variables. 4. Modeling long-run relationships in finance Cointegration and reasons why one might consider its presence in the model. Error-correction models, its usage and interpretation. Examples of cointegrated series and testing for cointegration between them. 5. Modeling volatility in financial econometrics Introduction to non-linearity: basic non-linear models and testing procedures. The concept of volatility in economics and econometrics. Conditional heteroscedasticity and the application of (G)ARCH models. Maximum Likelihood estimator, its derivation, usage and properties.	2 WLH
Course: Macroeconometrics (Exercise) *Contents*: 1. In the accompanying practice sessions students deepen and broaden their knowledge from the lectures. 2. Students are introduced to statistical software MATLAB and solve programming exercises.	2 WLH

3. Empirical project: writing a MATLAB code to analyze real world data and present the results in class.	
Examination: Project work (max.15 pages) or written examination (90 minutes) **Examination prerequisites:** Up to three submission homework items; length of up to five typewritten pages each (condition for admission to the examination is the achievement of 60% of the total number of attainable points) or group work (30 minutes presentation).	6 C

Examination requirements: • Demonstrate a profound knowledge of the core theoretical concepts in econometrics and univariate time series analysis. • Differentiate between various econometric models for financial and macroeconomic data. • Understand core concepts of time series analysis, such as stationarity and cointegration. • Be able to apply learned models and testing procedures to real world data.

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I, M.WIWI-QMW.0009 Introduction to Time Series Analysis
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0122: Behavioral Development Economics**	6 C 2 WLH

Learning outcome, core skills: Students will refresh concepts of microeconomic theory, understand why the assumption of neoclassical microeconomic models fails, learn alternative models that accommodate failures in rational decision making, and understand the importance of using behavioral economics to study poverty and development. Students should be able to formulate new research questions that consider behavioral aspects and have the instruments to conduct a field experiment.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Behavioral development economics (Lecture) *Contents*: The purpose of this course is to introduce the topic of behavioral and experimental economics. We discuss the shortcomings of neo-classical economic models to explain economic decisions and present alternative economic models that incorporate psychological factors. We present classical applications of behavioral economics to the problems of development and poverty.	2 WLH
Examination: Term Paper (max. 10 pages)	3 C
Examination: Oral Presentation (approx. 20 minutes)	2 C
Examination: Supplementary report (each participant writes a peer review on a proposal of another group) (max. 2 pages)	1 C

Examination requirements: The course is evaluated with a term paper. The objective of the paper is to present a public policy or business practice application of behavioral economics. The evaluation has three parts: 50% term paper (8-12 pages), 30% proposal of the term paper (2-3pages), each participant writes a 20% peer review on a proposal of another group (1-2 pages). Demonstrate the understanding of the main concepts and theories on behavioral economics. Ability to apply the theoretical concepts to propose policies that support sustainable development.	

Admission requirements: none	**Recommended previous knowledge:** Microeconomics, Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0123: Recent Topics in Macroeconomics**	6 C 2 WLH

Learning outcome, core skills: During the seminar students familiarize themselves with a macroeconomic topic from the recent literature. After a successful participation students are able to summarize the academic discussion of this topic in a short essay (max. 15 pages) and are able to critically discuss ongoing research of this topic and to present their work in class.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Recent Topics in Macroeconomics (Seminar) *Contents*: In the seminar a macroeconomic topic is investigated, which has recently attracted attention in academia and is subject to an ongoing academic debate. Further information on the current topic and the relevant literature is announced in the syllabus, which can be downloaded from the webpage of the Chair of Macroeconomics and Development: http://www.uni-goettingen.de/en/88544.html Past topics included Migrants and Refugees, The Chinese Economy, Cities and Development, The Past and Future of Work.	
Examination: Essay (max. 15 pages) with presentation (ca. 30 minutes) **Examination prerequisites:** Attendance and active participation in the seminar. Attendance at the introductory meetings.	6 C

Examination requirements: • The students demonstrate that they are able to summarize and explain one or two research papers, • the students demonstrate that they have the ability to critically discuss the results, • the students demonstrate that they manage to relate the paper(s) to research in that field and to the scientific debate in the literature.	

Admission requirements: none	**Recommended previous knowledge:** Mathematics, Econometrics, Macroeconomics
Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik Dr. Katharina Werner, Dr. Ana Abeliansky
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0124: Seminar in Financial Econometrics**	6 C 2 WLH

Learning outcome, core skills: Upon graduation, students acquire the following skills: • differentiating between existing econometric techniques in the area of international finance and macroeconomics, • explaining how these models are used to answer specific research questions, • presenting the result of their research and argue about its validity (both in written form and orally), • participating in discussions with qualified contributions and comment on the contents of other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar in Financial Econometrics (Seminar) *Contents*: In this course students review academic literature in macroeconomics and finance with a specific focus on econometric modeling of core relationships and empirical testing of economic theory. Suggested topics for seminar term papers are dedicated to both statistical theory and relevant applications in macroeconomics and finance.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (ca. 20 minutes) **Examination prerequisites:** Regular attendance. Active in discussions.	6 C

Examination requirements: • Ability to elaborate a topic independently and fully, including literature review, academic writing and an appropriate oral presentation, • research question is stated clearly at the beginning of the seminar paper and the contents are supporting a certain conclusion, which is addressed at the end of the paper.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I, M.WIWI-VWL.0113 Macroeconometrics
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0128: Deep Determinants of Growth and Development**	6 C 2 WLH

Learning outcome, core skills: After a successful participation, students have a deeper understanding of the mechanisms that lead to long-run economic growth and development. They learn about the forces that are linked to economic development like governance, corruption, institutions, democracy, inequality, culture, and social capital.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Deep Determinants of Growth and Development (Lecture) *Contents*: In this course, we will study long-run trends in economic development. We will analyze questions such as • Why are some countries richer than others? • Why is a country today richer than several generations ago? • How can historical events affect the economy today? • What are the mechanisms that lead to the transition from stagnation towards sustained growth? Contents: 1) (Bio-)Geography and Economic Development 2) Institutions 3) Government 4) Culture and Economic Development 5) The Deep Roots of Economic Development 6) Population and Economic Growth 7) Economic Growth in the Very Long Run **Literature:** The course is based upon selected research articles. Further information on the relevant literature is announced in the syllabus.	2 WLH
Examination: Oral exam (ca. 20 minutes) or written exam (90 minutes)	6 C

Examination requirements: Demonstrate: • a profound knowledge of the causes and consequences of long-run economic development • a deep understanding of standard models of economic growth • the ability to solve problems in a verbal, graphical and analytical manner	

Admission requirements: none	**Recommended previous knowledge:**

	Macroeconomics, Mathematics for Economists, Economic Growth, Econometrics as taught in the Bachelor courses
Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0132: New Developments in International Economics**	6 C 2 WLH

Learning outcome, core skills: During the seminar students familiarize themselves with a topic in international economics from the recent literature. After a successful participation, students are able to summarize the academic discussion of this topic in a short essay (max. 15 pages) and are able to critically discuss ongoing research of this topic and to present their work in class.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: New Developments in International Economics (Seminar) *Contents*: In the seminar a topic in international economics is investigated, which has recently attracted attention in academia and is subject to an ongoing academic debate. Further information on the current topic and the relevant literature is announced in the syllabus, which can be downloaded from the webpage of the Chair of Macroeconomics and Development: http://www.uni-goettingen.de/en/88544.html Past topics included Globalization 2.0, Global Imbalances, Environment and Resource Economics.	2 WLH
Examination: Essay (max. 15 pages) with presentation (ca. 30 minutes) **Examination prerequisites:** Attendance and active participation in the seminar. Attendance at the introductory meetings.	6 C

Examination requirements: • The students demonstrate that they are able to summarize and explain one or two research papers, • the students demonstrate that they have the ability to critically discuss the results, • the students demonstrate that they manage to relate the paper(s) to research in that field and to the scientific debate in the literature.	

Admission requirements: none	**Recommended previous knowledge:** Mathematics, Macroeconomics, Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Holger Strulik Dr. Katharina Werner, Dr. Ana Abeliansky
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0135: Advanced Economic Growth**	6 C 4 WLH

Learning outcome, core skills: After a successful participation, students have a deeper understanding of the mechanisms that lead to long-run economic growth and development. They familiarize themselves with standard growth models and learn about the driving forces of modern economic growth like capital accumulation, human capital and technology.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced Economic Growth (Lecture) *Contents*: 1) Refreshing the Solow growth model and the Diamond-OLG model 2) Neoclassical Growth (Ramsey-Cass-Koopmans model) 3) Overlapping Generations in Continuous Time 4) Human Capital and Economic Growth 5) Endogenous Growth with Expanding Varieties 6) The Scale Effect and Semi-endogenous Growth 7) Creative Destruction 8) Technology Diffusion 9) Economic Growth in the Very Long Run	2 WLH
Course: Advanced Economic Growth (Tutorial) *Contents*: In the accompanying tutorials, students should discuss and solve problem sets to deepen and broaden their knowledge of the topics covered in the lectures.	2 WLH
Examination: Oral examination (20 minutes) or written examination (90 minutes)	6 C

Examination requirements: Demonstrate: • a profound knowledge of the causes and consequences of long-run economic development • a deep understanding of standard models of economic growth • the ability to solve problems in a verbal, graphical and analytical manner	

Admission requirements: none	**Recommended previous knowledge:** Macroeconomics, Mathematics for Economists, Economic Growth, Econometrics as taught in the Bachelor courses
Language: English	**Person responsible for module:** Dr. Katharina Werner
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0137: Seminar Games in Economic Development**	6 C 2 WLH

Learning outcome, core skills: This seminar aims at training students in the use of game theory to understand development economics. Participants will learn how situations of strategic interaction can be modelled using game theory. We will discuss recent empirical applications of game theory to study land, labor and credit markets, collective action, conflict and violence.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Games in Economic Development (Seminar) *Contents*: Suggested areas of research: • development traps and coordination games, • rural poverty development and the environment, • risk, solidarity networks and reciprocity, • agrarian institutions, • savings, credit and microfinance, • social learning and technology adoption, • property right, governance and corruption, • conflict, violence and develpment, • social capital.	2 WLH
Examination: Presentationen (ca. 40 minutes) with written elaboration (max. 10 pages) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: Students have to give a presentation on a pre-assigned reading. Students should discuss the reading and critically asses the state of the art. We expect that students will be able to suggest new avenues.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0138: Quasi-Experiments in Development Economics**	6 C 3 WLH

Learning outcome, core skills: • Understanding of the counterfactual problem and critical assessment of sources and causes of endogeneity bias • Deep understanding of quasi-experimental estimation strategies and their identifying assumptions • Critical reading and reviewing of scientific articles that apply quasi-experimental techniques • Conduct of data analyses using quasi-experimental research designs • Ability to design and draft own research ideas that apply quasi-experimental identification strategies	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Quasi-Experiments in Development Economics (Lecture) *Contents*: The course deals with common quasi-experimental approaches for measuring causal effects in developing economics. The content focuses on the distinction between correlation and causality and provides students with a statistical toolkit which will allow them to plan and conduct their own independent research. The lecture starts off with a theoretical foundation of the counterfactual problem and how randomized controlled trials (RCTs), considered the gold standard, solve the counterfactual problem. Special attention is paid to endogeneity caused by omitted variables, reverse causality and measurement error. The main part of the course deals with common quasi-experimental approaches to causal effect identification, including difference-in-differences and fixed effects estimation, instrumental variables estimation, regression discontinuity design and matching design. The course further deals with standard error issues inherent to specific methods and their solutions as well as issues with multiple hypotheses testing. In the lecture, special attention is paid to the specific assumptions necessary for each quasi-experimental technique to measure causal effect and common threats to identification (such as selection bias). This is discussed based on a theoretical framework as well as at examples from the literature. A list with compulsory readings and background literature can be found athttp://www.uni-goettingen.de/vollmer	2 WLH
Course: Quasi-Experiments in Development Economics (Exercise) *Contents*: In tutorials, students learn how to use quasi-experimental techniques in a very practical manner through exercises in Stata and critical reading and reviewing of scientific articles.	1 WLH
Examination: Written examination (90 minutes) **Examination requirements:** • Comprehensive theoretical knowledge of quasi-experimental methods and their identifying assumptions. • Deep understanding of the distinction between correlation and causality.	3 C

• Ability to critically assess different biases and threats to internal validity. • Knowledge of practical implementation of methods. • Understanding of standard error issues and knowledge of dealing with them. • Understanding of the literature discussed in lectures and tutorials. • Ability to design evaluation recommendations based on a given situation.	
Examination: Practical examination (max. 10 pages) **Examination requirements:** • Ability to summarize and outline the key points of a scientific article. • Ability to critically assess violations to identifying assumptions of quasi-experimental techniques applied in the literature. • Knowledge of standard tests to demonstrate internal validity of quasi-experimental methods. • Practical implementation of quasi-experimental methods in Stata. • Critical review of own data analysis .	3 C

Examination requirements: • Comprehensive theoretical and practical understanding of causal identification and the major methods. • Practical implementation with Stata.	

Admission requirements: none	**Recommended previous knowledge:** Basic understanding of statistics, econometrics, and Stata or willingness to acquire these skills as part of the course.
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0140: Economics of Education**	6 C 4 WLH

Learning outcome, core skills: By end of this course the students will be able to understand the role of education for economic development. They will be familiar with theoretical and empirical approaches to analyze the demand and supply of education and understand factors affecting the effectiveness of education.. They will be able to do independent research in this area and get familiarize with the existing literature.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economics of Education *Contents*: • Human capital and signaling models • Private and social returns to education • Education production function • Teachers: teacher labour market, teaching quality, etc. • Students: peer effects, tracking, etc. • Equity aspects: gender gap, affirmative action, etc. • School choice: private and public investments in education • Role of cognitive versus non-cognitive skills in labour market outcomes	4 WLH
Examination: Written examination (90 minutes)	3 C
Examination: Presentation (ca. 30 minutes) with written elaboration (max. 5 pages)	3 C

Examination requirements: Students demonstrate a good understanding of the theory and empirical models related to the economics of education. They are able to critically evaluate existing research to draw policy relevant conclusions and identify open areas for further research in this field.	

Admission requirements: none	**Recommended previous knowledge:** Basics of microeconomics and econometrics
Language: English	**Person responsible for module:** Dr. Sarah Khan
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0143: Mind, Society and Development**	6 C 2 WLH

Learning outcome, core skills: This seminar would allow students to build on knowledge gained in the course behavioral development economics. Students will learn how behavioral economic models can be used to understand development and design development policies. Students are expected to do a critical assessment of existing literature. Identify gaps in research and suggest future research questions.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Behavioral Economics (Seminar) *Contents*: • Thinking socially • Thinking with mental models • Poverty • Early childhood development • Household finance • Productivity • Health • Climate change	2 WLH
Examination: Presentation (ca. 30 minutes) with written elaboration (max. 10 pages) **Examination prerequisites:** Regular and active participation	6 C

Examination requirements: All students are required to write a 10 page term paper doing a critical assessment of recent developments on the topic. The research paper is to be presented during the class. Participants are expected to explain findings of key papers on the topic, discuss the limitations of the papers and suggest future areas of research. It is expected that students attend presentations of the peers and participate actively in the discussion.	

Admission requirements: none	**Recommended previous knowledge:** Microeconomic; Statistics, Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Marcela Ibanez Diaz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0144: Migration Economics: Replication Course**	6 C 4 WLH

Learning outcome, core skills: The course addresses selected issues of international economic policy using methods of applied econometrics. By reading, discussing and re-estimating empirical papers on the topic, students should learn how to address politically relevant issues with the help of applied empirical analysis. The structured analysis of empirical papers using micro-econometric approaches will train general skills that are necessary for writing an empirical master thesis. By the end of the course, students will acquire the following competencies: • the ability to define a research question, • familiarity with issues of causal identification and model selection, • the ability to discuss the strengths and weaknesses of empirical strategies, • the ability to perform and document an empirical analysis, • the ability to interpret empirical results. Moreover, students will also broaden their skills of working with the statistical software Stata.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Migration Economics: Replication Course (Lecture) *Contents*: The lecture discusses recently published empirical papers around a selected issue of international economic policy (related to trade policy, migration, or other alternating globally relevant issues). It will typically consist of discussions of about 6-7 empirical papers, out of which about 5 papers will also be re-estimated in the practical sessions. Each course participant is expected to read the papers in advance and to be willing to participate in classroom discussion based on the papers. The required readings will consist of one empirical paper each week or each second week, all recently published in well-known economic journals.	2 WLH
Course: Migration Economics: Replication Course (Exercise) *Contents*: The practical part consists of exercise sessions in the CIP-pool that focus on re-estimating parts of the papers discussed in the lecture in form of weekly exercise sheets, using the statistical software Stata. In the first few weeks, a short introduction to data management in Stata will be given. The practical sessions aim to prepare students to performing an empirical analysis of their own.	2 WLH
Examination: Practical examination: 6 weekly assignments	2 C
Examination: Practical examination: final report (max. 12 pages) **Examination prerequisites:** For both examinations: 1 brief essay on the topic of the course (1 page)	4 C

Examination requirements:	

The course addresses selected issues of international economic policy using methods of applied econometrics. By reading, discussing and re-estimating empirical papers on the topic, students should learn how to address politically relevant issues with the help of applied empirical analysis. The structured analysis of empirical papers using micro-econometric approaches will train general skills that are necessary for writing an empirical master thesis. By the end of the course, students should know:

- How to define a research question
- How to think about issues of causal identification and model selection and how to discuss the strengths and weaknesses of their own empirical strategies
- How to perform and document an empirical analysis
- How to interpret the empirical results.

Moreover, students will also broaden their skills of working with the statistical software Stata.

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I M.WIWI-QMW.0005 Econometrics II basic skills in Stata are helpful
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Additional notes and regulations:
Participation is limited by the practical module examination.

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0146: Political Economy of Global Energy Markets**	6 C 2 WLH

Learning outcome, core skills: Students wil learn to examine the phenomena of transition and energy geopolitics from a political economy perspective, interpreting qualitative information and quantitative data. They will engange in discussions with a particular focus on two key aspects: power relations and the concept of 'energy ideology'. Through lectures, class discussion and student presentations, the course will equip students with the ability to critically analyse the transition and contemporary geopolitics of energy, utilising a structured analytical framework that will be developed throughout the course.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Political Economy of Global Energy Markets (Seminar) *Contents*: The course offers insights into the global entanglements of markets and business sectors such as, for example, the energy industry. The course analyzes the interplay of economic and governmental actors as well as non-governmental organizations in changing global markets. Special attention will be paid to global differences between industrialized countries and resource rich countries, between centers and peripheries of the global economy. The one-day excursion will provide an opportunity to relate the theoretical knowledge about globalization processes to specific cases and or actors, focusing on Individual organizations, companies or sites and their global and local entanglements. Recommended Reading: Specific literature recommendations are provided each semester. Please refer to current course listing.	2 WLH
Examination: Term paper (max. 15 pages) **Examination prerequisites:** Regular attendance and student presentation **Examination requirements:** The final exam will consist of a written essay on a topic proposed by the lecturer. The short assignments throughout the course and the participation in class activities will be requisite for admittance to the final exam. A short, ungraded report will be completed for the excursion.	6 C

Examination requirements: The final exam will consist of a written essay on a topic proposed by the lecturer. The short assignments throughout the course and the regular attendance will be requisite for admittance to the final exam. A short, ungraded report will be completed for the excursion.	

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Prof. Dr. Hartmut Berghoff Gastdozent Aurelia Mane Estrada
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0147: Empirical Political Economy**	6 C 4 WLH

Learning outcome, core skills: In this course, students learn about relevant issues of political economy by reading and discussing empirical papers that address the interlinkages between economics and politics. After completing the course students should: • Be familiar with a range of currently relevant issues in political economy: know about the role of elections, political participation and accountability, the role of various political institutions, the role of media and individual politicians as well as the connections between economics and politics. • Be able to read and assess new empirical papers on the topic. More specifically: • Be able to discuss the research questions of new papers in the light of the existing literature. • Be able to assess the pros and cons of various causal identification strategies and assess the strength (and potential problems) of identification strategies of new empirical papers. • Be able to interpret the results of new empirical studies and discuss the strengths and potential limitations of the study designs.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Empirical political economy (Lecture) *Contents*: The lecture is organized as a weekly reading course and discusses recent empirical papers on various issues of political economy. It addresses the role of elections and voting, political participation and franchise, electoral rules, gender representation in politics, the role of media and propaganda, the role of individual politicians and political connections, the role of media, as well as political accountability and institutions. Each course participant is expected to read the papers in advance and to be willing to participate in classroom discussion based on the papers. The required readings will consist of one empirical paper per week, recently published in well-known (top-tier) economic journals. Course outline: 1. Voting in democracies 2. Political representation 3. Media and information 4. Private returns to politics 5. Political accountability 6. Further selected topics	2 WLH
Course: Empirical political economy (Exercise) *Contents*: In the practical part, each student is required to present one additional empirical paper on the topic of the lecture and to discuss their identification strategies and results. In the	2 WLH

first few practical sessions a short introduction into reading empirical papers and dealing with issues of causal identification will be given. The papers assigned for presentation will also be empirical papers that have been recently published in well-known economic journals.	
Examination: Written examination (180 minutes) **Examination prerequisites:** In the written exam students are expected to read a short empirical paper that has not yet been discussed in the course and answer questions related to the paper. The exam is open-book.	4 C
Examination: Presentation (approx. 5 minutes, exactly 1 slide) with written elaboration (max. 1.500 words) in the form of a research proposal in groups of 2 students **Examination requirements:** The first examination requirement consists of a classroom assignment (a research proposal of maximal 1,500 words) on the topic of empirical political economy. Students are required to develop an empirical research design and present their research idea briefly (using exactly 1 slide) during the last lecture. The assignment should be completed in groups of two students.	2 C

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I M.WIWI-QMW.0005 Econometrics II
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0152: Applied International Economics**	6 C 2 WLH

Learning outcome, core skills: After a successful participation, students have a deeper understanding of the drivers and barriers to the movement of goods, capital and people. They can assess the relative importance of these factors (like culture, institutions, geography, free trade/investment agreements, etc) within an empirical framework. Moreover, they know the main empirical methods used in the literature and are able to apply them using STATA.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Applied International Economics *Contents*: In this course we will study several topics in the field of international economics ranging from migration to international trade and foreign direct investment, with an empirical focus and mainly using the gravity model and its different applications. We will analyze questions such as: • What are the empirical tools to assess the importance of trade barriers? • What determines migration flows? • How can we assess the effects of free trade agreements? • What drives foreign direct investment? Why do firms decide to invest abroad? In particular, the students should learn what are the forces that drive the movement of people, goods and capital and how to empirically assess the importance of the drivers/ barriers.	2 WLH
Examination: Oral examination (20 minutes) or written examination (90 minutes)	6 C

Examination requirements: Demonstrate: • a profound knowledge and understanding of the determinants (and barriers) of trade, FDI and migration, • the ability to assess the importance of these in an empirical manner.	

Admission requirements: none	**Recommended previous knowledge:** International Trade, knowledge of Stata software, Development Economics, Econometrics as taught in the Bachelor courses
Language: English	**Person responsible for module:** Dr. Ana Lucía Abeliansky
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0162: Firms in International Trade**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • give an overview of key features of the world trade pattern that cannot be explained by traditional trade theories based on comparative advantage, • understand and explain how models featuring firms in imperfectly competitive environments can rationalize key empirical regularities of current trade flows, • analyze the welfare effects of openness to international trade in a world with firm heterogeneity, • analyze and explain the new distributional effects of international trade resulting from firm heterogeneity.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Firms in International Trade (Lecture) *Contents*: **I. Intra-industry trade and the Krugman model** Discussion of empirical evidence on intra-industry trade. In-depth analysis of the Krugman model as an explanation of the evidence discussed. Model extensions to account for co-existence of intra- and inter-industry trade, the home-market effect, and multi-lateral trade flows in the gravity equation. **II. International Trade and Firm Heterogeneity** Discussion of empirical evidence on firm-level trade patterns. In-depth analysis of the monopolistic competition model with firm heterogeneity and international trade in final goods as an explanation of the evidence discussed. Effects of trade liberalization on individual firms, on the income distribution, and on aggregate welfare. **III. Offshoring and Firm Heterogeneity** Discussion of empirical evidence on the link between firm characteristics and the incidence of offshoring. Modelling the offshoring decision at the firm level, and its link to general equilibrium outcomes regarding welfare, firm-level employment, and the income distribution. **IV. Labour Market Effects of International Trade** Discussion of empirical evidence linking firm characteristics and firm export behavior to firm-level wages. Analysis of international trade on welfare, income distribution and unemployment in the presence of firm heterogeneity and labour market imperfections.	2 WLH
Course: Firms in International Trade (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a knowledge of the modern theoretical models that are used to explain intra-industry and firm-level trade patterns,	

• show the ability to analyze the welfare and distributional effects of international trade and offshoring in those frameworks.	

Admission requirements: none	**Recommended previous knowledge:** Microeconomics
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0163: Tax and Fiscal Competition**	6 C 4 WLH

Learning outcome, core skills: By the end of the module, students will have formed a reasoned view on whether, and under which conditions, competition among governments is beneficial or detrimental. They will know the main theoretical approaches to analyze strategic interaction among countries or subnational jurisdictions. They will be able to explain the meaning of, and the mathematics underlying, ideas such as “voting with the feet” and “race to the bottom”. They will be aware of the importance of the available government instruments (public goods and/or taxes) for the impact of fiscal competition on efficiency. Participants will be able to understand the possibilities and limitations of intergovernmental co-ordination of tax and spending policies. Participants will learn to explain the mechanisms driving key results in fiscal competition. They will acquire a certain proficiency in solving simple theoretical models, will be trained in providing intuitive explanations, and will evaluate empirical results.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Tax and Fiscal Competition (Lecture) *Contents*: **1. Local public goods** Optimal size of a jurisdiction. Locational efficiency. Efficient provision of public goods. Segregation along income and preferences. **2. Mobility and fiscal competition** Tax instruments of local jurisdictions. Efficient fiscal competition: the Tiebout model. Preference revelation through mobility. Fiscal competition in higher education. **3. Population size and the cost of providing public goods** Cost disadvantages of large, densely populated or of small, sparsely populated regions. Problems of empirically observing cost disadvantages. Justification for granting higher revenues to cities in fiscal equalization. **4. International tax competition and mobile capital** Capital mobility and strategic choice of tax rates. Fiscal externalities. Inefficient tax competition: the Zodrow/Mieszkowski model. Under-taxation and the supply of public goods. Tax competition and intergovernmental grants. **5. Tax competition and profit shifting** Transfer pricing regulation as an instrument in tax competition. Transfer pricing and strategic trade policy. Benefits and costs of international tax co-ordination.	2 WLH
Course: Tax and Fiscal Competition (Exercise) *Contents*: The exercise accompanies the lecture with exercises and revision.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements:	

Participants are required to show their understanding of the impact of mobility on tax bases and tax policy decisions. They shall demonstrate that they understand the theoretical assumptions which yield efficient or inefficient fiscal competition. To do this, they must be able to solve simple microeconomic models, explain the intuition behind theoretical results, and form a judgement about the plausibility and relevance of different models.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of microeconomics is assumed, basic knowledge of public finance and taxation is useful, students should be able and willing to work with simple mathematical economic models
Language: English	**Person responsible for module:** Prof. Dr. Robert Schwager
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0165: Introduction to PsychoEconomics**	6 C 4 WLH

Learning outcome, core skills: Students will: • get an overview of new concepts, techniques, and recent results in the field of economic psychology, • discuss alternative models of decision making, • get a brief introduction to neuroscientific techniques to measure and analyze decision making in the brain.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Introduction to PsychoEconomics (Lecture) *Contents*: The lecture is composed of three parts. The first part deals with the question of how decisions can be modeled within economics and psychology. Students will become acquainted with normative models of and descriptive approaches to individual decision making such as the revealed preference approach, expected utility, prospect theory, heuristics and biases, and dual-process theories. The second part of the lecture provides additional insights into how individual decisions are made. In this part we present the results of psychological studies looking at process data (response times, eye tracking, etc.). The third part of the lecture provides a brief introduction to decision making in the brain (neuroeconomics). Particularly, this part introduces the relevance of different brain areas for decision making and different brain imaging techniques to understand how decision making in the brain can be analyzed. Furthermore, exemplary studies in the field of neuroeconomics will be discussed.	2 WLH
Course: Introduction to PsychoEconomics (Tutorial) *Contents*: Tutorials will intensify the content of the lecture. The acquired knowledge from the lecture will be tested in text assignments, calculus problems, and/or oral discussions for each part of the lecture.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Students must demonstrate basic knowledge of the main concepts, techniques, and results provided in the lecture (including the literature for self-study) and the tutorials by means of solving text assignments, calculus problems, and/or multiple choice questions.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistics, microeconomics, game theory and experimental economics
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser
Course frequency: irregular	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0167: Topics in International Trade**	6 C 2 WLH

Learning outcome, core skills: After a successful completion of the course students have achieved following competences: • understand complex questions in international economics independently and communicate their knowledge both in written form and verbally, • understand theoretical models that are used in the literature and explain how the models are applied to answer specific research questions, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Topics in International Trade (Seminar) *Contents*: In this seminar, students review the theoretical and empirical literature concerning central issues in the research area of international trade. Issues covered in the seminar can relate to: • distributional effects of international trade • international production linkages • trade policy and further related questions.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (ca. 20 minutes) **Examination prerequisites:** Active participation in the seminar. Attendance at the introductory meeting.	6 C

Examination requirements: The students should be able to elaborate on a recent topic independently. This process involves literature research, academic writing and the appropriate oral presentation of the written paper.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-VWL.0001 Advanced Microeconomics, M.WIWI-QMW.0004 Econometrics I, M.WIWI-VWL.0092 International Trade
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0168: Economics of Multinational Enterprises**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand the role of multinational firms in the world economy, • explain why and when multinational firms exist, • understand how the existence of multinational firms changes the market structure and welfare.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Economics of Multinational Enterprises (Lecture) *Contents*: **Firms in International Trade** 1. Concepts, Stylized Facts, Issues 2. Overview of theory and empirical findings 3. Horizontal FDI 4. Vertical FDI 5. Trade Costs and Foreign Direct Investment 6. Internalization	2 WLH
Course: Economics of Multinational Enterprises (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a knowledge of the classical theoretical models that are used to explain the strategies of multinational firms, • narratively state the economic intuitions behind the theoretical models, • show the ability to analyze the differences between multinational firms and national firms.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-VWL.0092: International Trade
Language: English	**Person responsible for module:** Dr. Zhan Qu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0169: The Economics of European Integration**	6 C 4 WLH

Learning outcome, core skills: The goal of this course is to provide students with a general understanding of the underlying economics of European integration. After a successful completion of the course students are able to: • give an overview of the real economic and monetary aspects of European integration, • understand and analyze the different instruments of European trade policy and their effects on goods markets and international trade, • evaluate the implications of European integration for labour markets and migration, • understand, analyze and critically assess the effects of monetary integration as well as the causes and consequences of the Euro area crisis, • use both microeconomic and macroeconomic concepts to discuss and assess current challenges of European integration.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: The Economics of European Integration (Lecture) *Contents*: 1. The process of European integration Overview of EU institutions and history of the process of European integration. 2. International trade and goods market integration Effects of European trade policy on goods market integration. Analysis of different trade policy instruments on trade flows and gains from trade. Effects of market integration in the presence of imperfect competition. Application of micro-founded concepts and evaluation of empirical studies. 3. European labour markets, migration and unemployment Analysis of European integration policy on labor markets, wages and migration. Discussion of theoretical concepts and empirical evidence related to labor market effects of European integration. 4. Monetary integration and the Euro area crisis Analysis of the theory of Optimal Currency Areas and evaluation of monetary integration in the context of the Euro area. Application of macroeconomic concepts to understand the causes and consequences of the Euro area crisis. 5. Current challenges of European integration Critical assessment and application of economic concepts to address recent challenges related to European integration, including Brexit, migration, macroeconomic imbalances and trade wars. *Course frequency:* each winter semester	2 WLH
Course: The Economics of European Integration (Exercise) *Contents*:	2 WLH

The tutorial sessions are divided into two parts. In the first part, students solve problem sets and apply concepts and methods developed in the lecture. In the second part, students are expected to give short presentations (20 minutes) that discuss selected topics of current challenges of European integration. *Course frequency:* each winter semester	
Examination: Written examination (90 minutes) **Examination prerequisites:** Admission to the exam requires the presentation of one selected topic on European integration (20 minutes). Depending on class size, presentations can also take place in groups.	6 C

Examination requirements: • Demonstrate a profound knowledge of both microeconomic and macroeconomic concepts related to European integration, • show the ability to evaluate the effects of integration policies on goods markets, labor markets and monetary policy by means of theoretical models, • students should be able to assess the theoretical concepts with respect to empirical applications.

Admission requirements: none	**Recommended previous knowledge:** Good knowledge in Microeconomics and Macroeconomics and basic knowledge in Econometrics. Prior knowledge in International Trade is advised.
Language: English	**Person responsible for module:** Jun.-Prof. Dr. Florian Unger
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0174: China's Economic and Political Development**	6 C 2 WLH

Learning outcome, core skills: Students learn how to work through cutting-edge empirical research on China's economic and political development, synthesize and critically review scholarly work, implement their own independent research, and present research in front of an academic audience.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: China's Economic and Political Development (Seminar) *Contents*: The seminar content varies depending on current developments. Typically, topics from the following areas are covered: Long-run development of China, Economic history, Economic growth, Inequality and poverty, Demographics, Labor market and gender issues, Urbanization and infrastructure, Environment and climate, State-owned enterprises, Political institutions, Corruption and favoritism, Media, propaganda, and censorship, International trade and export economy, Investments and development aid, Global governance.	2 WLH
Examination: Term Paper (max. 15 pages, 70 %) with presentation including oral peer discussions of papers (approx. 30 minutes, 30 %) **Examination prerequisites:** Regular attendance and presentation of research plan	6 C

Examination requirements: Students must demonstrate an overview on a specific strand of the literature on China's economic and political development. By updating and/or extending a recent paper, students demonstrate their ability to apply econometric methods and their ability to go beyond the results of previous research, which they critically reflect on in a term paper. In presenting the term paper, they show their ability to concisely present complex theoretical and/or empirical concepts. Moreover, during oral discussions, students demonstrate their ability to defend, as well as critically reflect upon arguments from the empirical literature.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of Econometrics and statistical software (Stata, R, and/or Python) at Master level
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0175: International Development Policy**	6 C 4 WLH

Learning outcome, core skills: Students learn to analyze international development policies with politico-economic theories and empirical methods. After successful completion, students will have an overview of the state of the art of empirical research on development aid and other international development policies. They will understand and discuss the determinants of aid allocation, up-to-date methods to evaluate aid effectiveness at the macro and micro project level, decision-making at international development organizations, the role of conditionality, and potential reasons for the ineffectiveness of aid projects.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: International Development Policy (Lecture) *Contents*: The course content may vary slightly depending on current developments. Typically, topics from the following areas are covered: • statement of the “problem” and stylized facts, • determinants of aid giving, • allocation of aid across countries, • allocation of aid within countries, • aid effectiveness, • side effects of aid, • emerging bilateral donors, • non-state actors, • international development organizations, • debt relief, • trade policy, • migration and humanitarian crises, • long-run effects of colonialism, and • impact evaluations of development aid projects and programs.	2 WLH
Course: International Development Policy (Exercise) *Contents*: The exercise session is used to deepen understanding of concepts and empirical methods used in the lecture, learn how to read scientific papers, and learn how to write policy reports.	2 WLH
Examination: Written examination (60 minutes)	4 C
Examination: Portfolio	2 C

Examination requirements: In the exam, students are expected to summarize, explain and critically discuss academic papers that have been covered in the lecture and/or exercise session. With the policy report, students are expected to demonstrate their ability to synthesize, present and discuss academic research results for a policy audience. Depending on class size, presentation of the policy report can also take place in groups.	

Admission requirements: none	**Recommended previous knowledge:** Knowledge of Econometrics at BA level, Panel Data Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: not limited	

Additional notes and regulations:
Explanation Learning journal:
Policy report (submit a maximum of 5 pages; presentation in the exercise session; discussion of another policy report).

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0179: Seminar Monetary Economics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course students have achieved following competences: • understand complex questions in monetary economics and communicate their knowledge both in written form and verbally, • understand complex empirical econometric models that are used in the literature and explain how theoretical models are used answer specific research questions, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Monetary Economics (Seminar) *Contents*: In this seminar students review the literature on selected topics in monetary economics.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance. Active in discussions.	6 C

Examination requirements: The students should be able to elaborate on a recent topic independently. This process involves literature research, scientific work and writing and the appropriate oral presentation of the written paper.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0180: Methods in Advanced Microeconomics**	6 C 4 WLH

Learning outcome, core skills: The students: • acquire the formal methods which are required for an advanced course in microeconomic theory, • understand the logic of formal statements, • are familiar with the definitions and results in multivariable calculus, • can apply the methods to basic economic problems.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Methods in Advanced Microeconomics (Lecture) *Contents*: This course will cover the following topics on a graduate level: • Basics of set theory, topology, logic and proof techniques • Revision of one-variable calculus • Multivariable calculus • Basics of static optimization • Additional topics, e.g., fixed points and tools for comparative statics	2 WLH
Course: Methods in Advanced Microeconomics (Exercise) *Contents*: The exercises deepen the understanding of the lectures' material and apply the methods to basic economic problems.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Students need to prove: • the understanding of basic logic and proof techniques, • the knowledge of the presented definitions and formal results in multivariate calculus, • the ability to apply the covered methods to economic problems.	

Admission requirements: none	**Recommended previous knowledge:** Advanced methods for economists: optimization
Language: English	**Person responsible for module:** Dr. rer. pol. Stephan Müller
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0181: Global Production: Firms, Contracts and Trade Structure**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand the impact of contractual incompleteness on the production and sourcing decisions of multinational firms, • explore the effect of institutions on the export behavior of firms, • understand the modern day empirical stylized facts about trade and foreign direct investment.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Global Production: Firms, Contracts and Trade Structure (Lecture) *Contents*: 1. Made in The World 2. Workhorse Models 3. Contracts and Export Behavior 4. Contracts and Global Sourcing 5. Internalization: the Transaction-Cost Approach 6. Internalization: the Property-Rights Approach *Course frequency:* each winter semester	2 WLH
Course: Global Production: Firms, Contracts and Trade Structure (Exercise) *Contents*: In the accompanying practice session students deepen and broaden their knowledge from the lectures. *Course frequency:* each winter semester	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate a knowledge of the classical theoretical models that study the effect of a host country's contracting institutions on a firm's choice of the production location for its intermediate inputs, • show the ability to analyze the empirical results that support the theoretical model.	

Admission requirements: none	**Recommended previous knowledge:** Microeconomics, International Trade
Language: English	**Person responsible for module:** Dr. Zhan Qu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students:	

not limited	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0182: Evaluating Development Effectiveness**	6 C 2 WLH

Learning outcome, core skills: Students learn about the most recent literature on aid effectiveness considering concrete policy examples. By replicating a paper on development aid effectiveness, students get exposed to the econometric toolkit used to evaluate effective policies and critically assess existing scholarly work. Moreover, students practice presenting research in front of an academic audience.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Evaluating Development Effectiveness (Seminar) *Contents*: The course provides an overview of the evolution of the academic literature on development effectiveness and also introduces students to the current policy debate, including the current debate on the Agenda 2030 for Sustainable Development. Students will learn how to provide a clean and systematic overview on the related literature. Moreover, students are introduced to state-of-the-art methods for evaluating development effectiveness and how to critically reflect on data quality and methods. The seminar content varies depending on current developments in the academic and policy debate. Typically, the topics covered include the effects of development aid and policies on economic growth, health, education as well as the private sector. Applications may also cover aid allocation and negative side effects of development cooperation.	2 WLH
Examination: Term Paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance.	6 C

Examination requirements: Students must demonstrate an overview on a specific strand of the development effectiveness literature. By replicating a recent paper, students demonstrate their ability to apply econometric methods and their ability to go beyond the results of previous research, which they critically reflect on in a term paper. In presenting the term paper, they show their ability to concisely present complex theoretical and/or empirical concepts. Moreover, during oral discussions, students demonstrate their ability to defend, as well as critically reflect upon arguments from the empirical literature.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-QMW.0004 Econometrics I, while facultative, the module M.WIWI-VWL.0175 International Development Policy introduces underlying theories and methods
Language: English	**Person responsible for module:** Dr. Lennart Kaplan
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	3 - 4
Maximum number of students: 10	

Additional notes and regulations:
Explanation of Course Portfolio: Replication of one research article and discussion of results in a term paper [70%]; Presentation of term paper and oral peer discussions of one paper [30%].

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0183: Geospatial Analysis for Development Economics**	6 C 2 WLH

Learning outcome, core skills: The goal of the course is twofold (i) to expose students to a large and relatively new literature in economics that uses geospatial data in innovative ways, and (ii) to provide students with the methodological skills needed to critically assess these papers. The participants will learn to “think spatially” and come up with their own original research questions utilizing spatial methods.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Geospatial Analysis for Development Economics (Seminar) *Contents*: This course provides an overview of how space is used in empirical economics with a particular focus on development economics. It introduces the basic tools that are employed in geospatial research. We will cover geographic projections, geospatial data types, vector and raster data processing, and a selection of more advanced topics. After obtaining the toolkit, we will then learn how these techniques are applied in development economics and beyond by replicating a selection of influential papers.	2 WLH
Examination: Portfolio **Examination prerequisites:** Participation in class [at the margin]	6 C

Examination requirements: By writing a take-home exam, students demonstrate a good understanding of the literature in development economics that relies on geospatial data and of the methodological skills needed for such analyses. By a term paper, students demonstrate their ability to replicate a scholarly article in this field and critically discuss it.	

Admission requirements: none	**Recommended previous knowledge:** Students should be familiar with mathematical statistics, basic econometrics, and development economics. Some experience with R would be very helpful. In particular: M.WIWI-QMW.0004 Econometrics I, M.WIWI-QMW.0005 Econometrics II, M.WIWI-VWL.0008 Development Economics I
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4
Maximum number of students: 20	

Additional notes and regulations:

Explanation Learning Journal: short term paper [50%]; short take-home exam [50%].

This course is recommended for advanced Master students and open to PhD students.

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0184: Empirical Analysis of Conflict and Development**	6 C 2 WLH

Learning outcome, core skills: • Students learn about the most recent empirical literature on conflict and development, • students get exposed to the econometric toolkit used to run simple regression analyses, • students will also learn how to best present quantitative results and how to relate them to the most recent literature by writing a seminar paper on their own findings, • moreover, students practice to present and discuss research in front of an academic audience.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Empirical Analysis of Conflict and Development (Seminar) *Contents*: The course provides an overview over the most recent literature on conflict and development. Students are introduced to state-of-the-art empirical methods used in this field. They will learn how to critically reflect on data quality and methods. The seminar focus varies depending on current developments in the academic debate, but will always be related to the literature strands on the determinants and consequences of conflict, mostly from a micro-level perspective. Students will elaborate on a newly identified relationship or new theoretical claim from the most recent literature. Students will test the same pre-defined hypotheses, though each student does so for a different country or region. Students will practice to work with data in Stata by running simple regression models. The results of their regression analyses will be used to confirm or falsify the pre-defined hypotheses. The term paper consists of presenting these findings and discussing them with respect to the recent literature. Students will also learn how to critically assess the simple regression models they used and discuss which methods would be more appropriate to identify causal effects.	2 WLH
Examination: Term Paper (max. 15 pages) and presentation (approx. 20 minutes) **Examination prerequisites:** Regular attendance, written research proposal.	6 C

Examination requirements: • By doing regression analyses of a pre-defined topic within the field of conflict and development, students demonstrate their ability to apply econometric methods and to go beyond the results of previous research, which they critically reflect in a term paper, • in presenting the term paper, they show their ability to concisely present complex empirical concepts, • moreover, during oral discussions, students demonstrate their ability to defend, but also to critically reflect upon, arguments from the empirical literature.	

Admission requirements:	**Recommended previous knowledge:**
none	M.WIWI-QMW.0004 Econometrics I,

	M.WIWI-VWL.0008 Development Economics I
Language: English	**Person responsible for module:** Prof. Dr. Sarah Langlotz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0187: Social Assistance in Developing Countries**	6 C 2 WLH

Learning outcome, core skills: This course aims to provide students with an in-depth overview of the current academic literature on social assistance policies, particularly (conditional) cash transfers, in developing countries. By the end of the course, students will: • be able to describe many social assistance instruments currently applied in the developing world, • be able to discuss whether these instruments are effective in fostering wellbeing of different beneficiaries (e.g. children, unemployed, and elderly) and in different situations (e.g. pandemic, disaster, fragile states), • have gained a basic understanding of the implementation of randomized experiments and how they can be useful in evaluating the effectiveness of policies, • be able to compare conditional and unconditional transfer policies, • understand the importance of various design aspects for the effectiveness of a social assistance policy (e.g. cash vs. in-kind, payment modalities, add-on components, identification of beneficiaries, targeting), • discuss and assess empirical research papers on the topic.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Social Assistance in Developing Countries (Seminar) *Contents*: Social assistance programs have become increasingly popular to stabilize incomes and increase prosperity in developing countries over the past two decades. In this seminar, we focus on conditional and unconditional cash transfer. We will discuss aspects of the implementation, design, and targeting of such transfers. In a series of specialized topics, we will then unravel how effective cash transfers are to improve poverty-related outcomes in different regions, in post-conflict settings, during pandemics, and as disaster relief. We will also discuss issues such as the behavior of voters in response to assistance policies, compare cash transfers and active labor market policies, and shed light on the ambiguous effect of cash transfers on female (economic) empowerment as well as gender-based violence. Moreover, we will examine the widespread hypothesis that recipients of unconditional transfers lack the incentive to work or to care for their economic future self-responsibly.	2 WLH
Examination: Presentation (approx. 30 minutes) with written elaboration (max. 15 pages) **Examination prerequisites:** Regular attendance, discussion of another student's seminar paper	6 C

Examination requirements: In the term paper, students are expected to address a self-chosen research question (within the scope of an assigned topic). Term papers should be analytical and critical, develop a coherent argument, draw own conclusions, and should go beyond the pure	

summary of existing literature. During the seminar, students are expected to present the core concepts and main findings from their term paper in a concise and educational way.	

Admission requirements: none	**Recommended previous knowledge:** Advanced knowlege in microeconomics, M.WIWI-VWL.0009 Development Economics II, ability to read scientific articles
Language: English	**Person responsible for module:** Prof. Dr. Andreas Fuchs
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0188: Ethics and Security in "Field Research" for Development Economics**	6 C 2 WLH

Learning outcome, core skills: The course is tailored to raise students' awareness of potential security and ethical challenges in field research and how they are intertwined. Although those challenges are very context-specific, the course provides students with toolkits for better planning and reflection as well as knowledge about the relevant support structure. After successful completion, students will have an overview on the most frequent ethical and security issues in field research, how to incorporate security and ethical considerations in their own planning, and where to look for further guidance.	**Workload:** Attendance time: 18 h Self-study time: 162 h

Course: Ethics and Security in "Field Research" for Development Economics (Seminar) *Contents*: The course covers established concepts as well as current developments on ethical and security aspects of field research in the following areas: introduction to research ethics and the main challenges/dilemmas; positionality; cooperation with local scientific partners; working conditions of field research staff; security; ethical conduct when interacting with local research populations. Students practice to critically reflect and discuss ethical as well as security aspects and learn how to apply them to real-world research projects.	2 WLH
Examination: Term Paper (max. 12 pages) **Examination prerequisites:** Regular attendence	6 C

Examination requirements: In the term paper, students will summarize, explain and critically discuss ethical and security challenges that have been covered in the seminar. Moreover, students need to demonstrate their ability to apply those concepts to their own or a hypothetical research project writing. Students are required to ground their reflections in theoretical considerations of ethics and critically review other academic work.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-VWL.0008 Development Economics I: Macro Issues in Economic Development, M.WIWI-VWL.0009 Development Economics II: Micro Issues in Development Economics
Language: English	**Person responsible for module:** Lisa Bogler, Dr. Lennart Kaplan, Ann-Charline Weber
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4

Maximum number of students: 12	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0189: Natural Language Processing (NLP) in Macroeconomics**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course, students have achieved the following competencies: • understand basic natural language processing (NLP) questions and techniques and their application to transform textual data into time-series data, • understand complex econometric models used in the literature and explain how NLP is combined with these models to answer specific research questions, • communicate knowledge of these econometric models and the application of NLP within these models in writing and orally, • participate actively in discussions with qualified contributions and comment on the contents of the other presentations.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Natural Language Processing (NLP) in Macroeconomics (Seminar) *Contents*: Students revise the literature on natural language processing (NLP) with applications to macroeconomics. In the literature, NLP is used to analyse text data from various sources such as news media (e.g. online newspapers), social media (e.g. Twitter messages) or central bank and government press releases. An example of an application in literature would be the text analysis of newspapers. Here NLP is used to determine the content of each newspaper article over a period of several years and to create a news index from it. This news index is in turn integrated into a nowcasting model for improved forecasting of national GDP growth.	2 WLH
Examination: Term paper (max. 15 pages) with presentation (approx. 20 minutes) **Examination requirements:** Regular attendance. Active in discussions.	6 C

Examination requirements: The students should be able to elaborate on a recent topic independently. The process involves literature research, scientific work, and writing, and the appropriate oral presentation of the written paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Tino Berger
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0190: Seminar Topics in Urban Economics**	6 C 2 WLH

Learning outcome, core skills: The course Topics in Urban Economics introduces current topics in the context of urban economics. Students will be assisted to develop an approach to answer relevant research questions in the field. Course participants will gain substantial skills in scientific writing, empirical analysis and the structured scientific approach to a current problem. At the end of the course, students will have extended knowledge and experience in the following aspects: • understanding and discussing fundamentals in urban economics, • developing a research question and the statistical/ empirical approach to address this question, • writing a scientific paper that embeds own results within the existing literature. In addition, students will be offered the chance to expand their skills in statistical and scientific writing software (R and LATEX – not mandatory).	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Seminar Topics in Urban Economics (Seminar) *Contents*: The course deals with different aspects of a relevant topic from the field of urban economy based on a current issue. Numerous seminar topics deal with issues from the global south. The goal is to teach a fundamental understanding of urban economics through the writing of a short paper on the jointly defined research question. The process is guided and students will be offered support in the independent derivation of a specific topic for their paper and the methodological statistical approach to their analysis.	2 WLH
Examination: Term Paper (max. 15 pages) **Examination prerequisites:** Regular attendance and presentation (approx. 15 minutes)	6 C

Examination requirements: Independent literature research and critical examination thereof. Presentation of the term paper in the context of a lecture. The students independently describe and reflect on a project or research topic on a scientific issue. The presentation is to be regarded as a preliminary examination and the written paper as an examination.	

Admission requirements: none	**Recommended previous knowledge:** Basic skills in Statistics
Language: English, German	**Person responsible for module:** Dr. Jan Christian Schlüter
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3

Maximum number of students: 10	

Additional notes and regulations:
The course language in the seminar is English. If desired, the term paper can also be written in German.

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0191: Seminar Advanced Topics in Urban Economics**	12 C 4 WLH

Learning outcome, core skills: The course Advanced Topics in Urban Economics aims at teaching current topics in the context of urban economics. Students will be guided to develop and discuss a scientific approach to answer urgent research questions in the field. This process will require in-depth literature reviews, continuous discussions within the course and critical thinking towards current problems and solutions. The course participants will gain substantial skills in scientific writing, empirical analysis and the structured approach to a current problem. At the end of the course, students will have extended knowledge and experience in the following aspects: • elaborating and structuring current issues in the context of urban economics, • developing a research question and the structure of a paper, • conceptualizing and executing a statistical/ empirical analysis, • applying concepts and tools from the field of quantitative methods or complexity science to the research question, • discussing and placing own results within the existing literature. In addition, students will be able to expand their skills in statistical and scientific writing software (R and LATEX – not mandatory).	**Workload:** Attendance time: 56 h Self-study time: 304 h

Course: Seminar Advanced Topics in Urban Economics (Seminar) *Contents*: The course deals with specialized aspects of a relevant topic from the field of urban economics based on a current issue. Numerous seminar topics deal with issues from the global south.The basic insights from the Topics in Urban Economics seminar are taken up in this course and analyzed in the context of high-dimensional data using statistical and econometric methods. The course will present several current problems and discuss potential solutions, thereby deriving the individual research questions jointly with a thorough literature review performed as a self-study. The conceptualization of the required paper and the empirical approach to the research questions will be done under close supervision. The paper writing and analysis will be guided and after first results a mandatory presentation will be due. This presentation is intended to introduce, share and discuss the approach, results and problems with the entire course. The course is completed after the submission of the required paper.	4 WLH
Examination: Term Paper (max. 30 pages) **Examination prerequisites:** Regular attendancen and presentation (approx. 15 minutes)	12 C

Examination requirements:	

Independent literature research and critical examination thereof. Presentation of the term paper in the context of a lecture. The students independently describe and reflect on a project or research topic on a scientific issue. The presentation is to be regarded as a preliminary examination and the written paper as an examination.	

Admission requirements: none	**Recommended previous knowledge:** Basic skills in Statistics, Topics in Urban Economics
Language: English, German	**Person responsible for module:** Dr. Jan Christian Schlüter
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3
Maximum number of students: 10	

Additional notes and regulations:
The course language in the seminar is English. If desired, the term paper can also be written in German.

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0193: The Economics of Health and Aging**	6 C 2 WLH

Learning outcome, core skills: After a successful participation, students have a deeper understanding of the mechanisms that underly human aging and its implications for economic behavior. This interdisciplinary course provides students with the gerontological and biological foundation of the aging process as well as the basic concepts of health economics.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: The Economics of Health and Aging (Lecture) *Contents*: In this course, we will study basic models of health and aging and confront their implications with empirical evidence. We will analyze questions such as: • How do we age? • Which consequences does aging have for economic behavior? • How is health measured and what shapes the demand for health? • How do men and women differ in health and aging? • Which implications does health have for institutions and the macroeconomy? Table of contents: 1. Basic Models of Health Demand 2. Models of Aging and Longevity 3. Aging Patterns Around the World 4. Applications: - The Preston Curve - The Genesis of the Golden Age - The Cardiovascular Revolution - Disentangling the Gender Gap in Longevity - Health and Technology 5. Health and Development 6. Health and Institutions	2 WLH
Examination: Oral examination (approx. 20 minutes) or written examination (90 minutes)	6 C

Examination requirements: Students should demonstrate: • a profound knowledge of the basic concepts of health and aging, • the ability to discuss propositions around the key concepts presented during the course, • the ability to solve problems in a verbal, graphical and analytical manner.	

Admission requirements: none	**Recommended previous knowledge:** Mathematics for economists and econometrics as taught in the Bachelor's degree courses
Language:	**Person responsible for module:**

English	Dr. Johannes Schünemann
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0194: Field Research in Development Economics**	6 C 3 WLH

Learning outcome, core skills: Students will acquire specific skills necessary for designing and conducting field research in topics of public health and development economics with a particular focus on developing countries. After completion of the module, they will be able to put together a research proposal, reflect on ethical implications of the proposed research, choose a suitable study design, and design survey tools.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Field Research in Development Economics (Seminar) *Contents*: The course focuses on building up core skills for planning and implementing a research project around health, education, or development more broadly. The students (assigned to small groups of 2-5 students each) set up a research protocol for their own small-scale research project (including ethical considerations and application for IRB approval), write project proposals and terms of reference for funding and overseeing institutions (such as ethical committees) and develop effective tools for policy communication. A particular emphasis is placed on research methodology and quantitative skills pertinent to data collection and evaluation needs, such as sampling methodology (power calculations, sampling design), randomized assignment (units of randomization, balance checks), and causal inference for experimental designs (treatment effect estimation, dealing with treatment noncompliance, attrition, and other threats to internal validity). At the end of the course each student group will have elaborated a project portfolio ready for application with funding agencies.	3 WLH
Examination: Portfolio (max. 25 pages per person) **Examination prerequisites:** Regular attendance, active participation in class, presentation of work in progress	6 C

Examination requirements: Students should demonstrate the ability to independently plan a research project. Their portfolio will include a research proposal, study protocol, analysis plan, ethical clearance proposal, survey instruments, implementation plan.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of statistics and econometrics
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Maximum number of students: 20	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0195: Design of Socio-Economic Surveys**	6 C 2 WLH

Learning outcome, core skills: The seminar Design of Socio-Economic Surveys introduces essential topics of quantitative survey methodology and techniques with a focus on practical aspects of data collection. It will provide knowledge on the design and the organization of surveys for collecting representative quantitative survey data in the context of low- and middle-income economies. The emphasis will be placed on how to minimize different sources of error in survey design and implementation. The course should prepare students to conduct empirical research projects in line with scientific standards and to assess issues of survey design encountered in applied work. After completing the seminar, students will also be able to assess various empirical studies in economics from the perspective of survey design. The course will not cover the analysis of survey data.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Design of Socio-Economic Surveys (Seminar) *Contents*: **Block course:** The meeting will introduce the basics of survey design and ethical considerations, explain sample design strategies, introduce questionnaire design, discuss the organization of data collection, issues of nonresponse, survey-weights and post-collection processing of survey data. **Individual and group work:** In what follows, the seminar will contain self-directed but supervised work, including group-work, that consists of (i) preparing a module of survey questions on a selected topic and writing a risk assessment and budgetary plan for the survey, and (ii) analyzing the benefits and limitations that empirical analyses face that rely on pre-existing survey instruments. Weekly office hours by appointment. **Presentations:** Group presentations as part of the examination (see below). Active discussion of the presentations. **Submission:** Submission of the individual written elaboration of the survey design.	2 WLH
Examination: Presentation (approx. 20 minutes in group work) with written elaboration (max. 15 pages in individual work) **Examination prerequisites:** Regular attendance and active participation in discussions.	6 C

Examination requirements:

1. **Group presentation:** the presentation will focus on own survey design. Groups will be asked to (i) present own questionnaire module on a selected topic, (ii) identify and compare the existing secondary surveys on the same topic, (iii) assess the potential threats.
2. **Individual written elaboration:** the written elaboration will consist of two parts: (i) documentation of the own survey design, including a sampling design, questionnaire, budget calculation and a risk analysis as a follow-up on the group work (max. 7 pages); (ii) critical evaluation of a selected published article

in economics with a special focus on the congruence between the research objectives of the paper and the implemented survey instruments (max. 8 pages).	

Admission requirements: none	**Recommended previous knowledge:** Basic skills in statistics
Language: English	**Person responsible for module:** Dr. Zaneta Kubik
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0196: African Development**	6 C 2 WLH

Learning outcome, core skills: After successful completion of the course, students are able to apply theoretical concepts and empirical tools of (development) economics to questions of African economic development. They can critically evaluate relevant empirical evidence. Further, students know how to design a poster on a specific study or issue and they are able to concisely summarize and present the poster content.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: African Development (Lecture) *Contents*: This course addresses issues of economic development relevant in the African context. It discusses the current issues and trends in African development as well as the impact of historical legacies. The course puts emphasis on economic development as structural change. Selected issues may include but are not limited to the following: • Historical legacies and (post-) independence • Structural adjustment • Economic growth and structural change • Poverty and inequality • Demographic challenges • Recent structural transformation and employment • Trade and foreign direct investment • Digitalization and development The course combines lectures with integrated exercises that deepen the understanding of selected issues area, empirical applications and approaches. In these exercises, students will develop and present a poster.	2 WLH
Examination: Oral examination (approx. 15 minutes) **Examination prerequisites:** Poster presentation	6 C

Examination requirements: In the poster presentation, students demonstrate their ability to develop a coherent argument using key insights from an academic paper or on a selected issue area. They can concisely highlight these key insights and pitch them to their fellow students. They can also discuss the main topics with their fellow students. In the oral examination, students demonstrate their ability to apply their empirical and theoretical knowledge to questions of African economic development.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in macroeconomics, microeconomics, econometrics, and growth and development

Language: English	**Person responsible for module:** apl. Prof. Dr. Jann Lay
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0197: Advanced Topics in International Trade**	6 C 3 WLH

Learning outcome, core skills: Firstly, students will have a comprehensive knowledge of the core trade models. After taking the course, they are expected to be able to define and interpret the key features and the limits of the international trade theories learned in this course. Secondly, they are expected to have a good understanding of the empirical tools used in international economics. They are expected to be able to apply and integrate the knowledge learned in this course to conduct independent research. Thirdly, they will improve their competencies in scientific writing and presentation skills.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Advanced Topics in International Trade (Lecture) *Contents*: Our first goal is to introduce canonical models in international trade. A tentative list of topics includes the gravity equation, neoclassical trade theory, trade and labor markets, economic geography, and the role of firms in international trade. The second goal is to present the empirical tools used in international trade. A tentative list of topics includes the US-China trade war, trade and labor market, trade and environment, the EU energy crisis and trade diversion, and the gravity equation. Students will also get familiar with several widely used trade-related datasets and learn how to conduct empirical analysis. Our third goal is to introduce frontier research to students. We will draw on some recent academic papers from international trade, which will allow students to have a good understanding of cutting-edge research and help students outline future research questions.	3 WLH
Examination: Portfolio (assignment extensive reading (1), assignment intensive reading or replication (2.1 or 2.2))	6 C

Examination requirements: Assignment 1 (compulsory, 30 %): extensive reading, summarize papers on one specific topic (15 pages of slides; written text is not required). Assignment 2.1 (compulsory, 70 %): intensive reading. Choose two papers from a given list and write two summary reports (3-6 pages in total) **or** Assignment 2.2 (compulsory, 70 %): replication. Replicate one empirical paper and write a replication report (5 pages).	

Admission requirements: none	**Recommended previous knowledge:** Microeconomics, Econometrics
Language: English	**Person responsible for module:** Prof. Dr. Lei Li
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

twice	2 - 3

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0198: Industrial Economics**	6 C 4 WLH

Learning outcome, core skills: After successful completion of the course students are able to: • distinguish between various market and competition models, • apply various solution concepts and use them to investigate the impact of the market form on price building and market supply, • analyze the resulting welfare effects, • apply concepts of game theory.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Industrial Economics (Lecture) *Contents*: 1. Game-theoretical concepts 2. Monopolistic market power: inefficiencies, causes and limits of market power 3. Horizontal collusion and mergers 4. Vertical restraints of competition and anti-competitive practices 5. Two-sided markets	2 WLH
Course: Industrial Economics (Exercise) *Contents*: In the accompanying practice sessions students deepen and broaden their knowledge of topics introduced in the lectures.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: Students have to: • solve exercises computationally, graphically, as well as verbally, • demonstrate a fundamental knowledge of equilibrium analysis, • show the ability to analyze various market forms and their welfare implications, • demonstrate fundamental knowledge in game theory.	

Admission requirements: none	**Recommended previous knowledge:** Microeconomics, Game Theory
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser Dr. Tanmoy Das
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0199: Geoeconomics and Geopolitics**	6 C 2 WLH

Learning outcome, core skills: After successfully completing the module, students will be able to apply an analytical framework to assess major historical and contemporary issues in geoeconomics and geopolitics, including international trade disputes, China–U.S. rivalry, Europe–U.S. relations, and North–South relations, and use a comprehensive toolkit to make informed strategic judgments in complex policy settings, with particular attention to how Europe should respond to China's manufacturing rise, the United States' recent extractive turn, and broader internal political-economic challenges and crises. Students will also strengthen professional communication skills and scientific writing through presentations and essays.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Geoeconomics and Geopolitics (Lecture) *Contents*: The current surge in great power conflict and the prevalence of hybrid warfare underscores the urgent need for an integrated, holistic geopolitical paradigm. This paradigm must transcend academic specializations and effectively synthesize insights from all branches of the humanities and social sciences to support informed analysis and decision-making. This course provides a systematic introduction to geoeconomics and geopolitics, anchored in a unified theoretical framework for interpreting geopolitical events. The curriculum is designed to cultivate a balanced, critical understanding of historical and contemporary affairs through the rigorous integration of theory and empirical case studies, equipping students with essential contextual knowledge for advanced graduate study or professional roles in global governance and analysis.	2 WLH
Examination: Term Paper (max. 10 pages) **Examination prerequisites:** A short in-class presentation (approx. 15 minutes)	6 C

Examination requirements: • Demonstration of an overall understanding of frontier topics on international economics, geoeconomics, and geopolitics, • summarize and compare various theories on geoeconomics and geopolitics.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Lei Li
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3

Georg-August-Universität Göttingen **Module M.WIWI-VWL.0200: Empirical International Trade**	6 C 4 WLH

Learning outcome, core skills: After a successful completion of the course students are able to: • understand common empirical methods in the field of international trade, • explain the problem of causal identification and how to address it, • formulate their own research ideas in international trade, • discuss recent findings in the trade literature, • identify threats to causal identification and propose alternative research designs.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Empirical International Trade (Lecture) *Contents*: This is a methodology course centered around recent empirical research in international economics. The methods discussed include structural as well as design-based approaches. Lectures are structured around research papers in the field of International Trade. The course is further split into four different topics, which we each discuss within the framework of empirical research design. The focus is on causal identification and on the empirical methods used to mitigate selection bias. The topics discussed in the course are the following: *Contents:* 1. Gravity Equations 2. Welfare and International Trade 3. International Trade & Labor Markets 4. International Trade & Market Power	2 WLH
Course: Empirical International Trade (Exercise) *Contents*: In the accompanying practice sessions students apply and deepen their knowledge of empirical research designs.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Students should be able to show sufficient knowledge of the econometric models discussed in class, • be able to independently evaluate research designs, • be able to formulate and propose their own research ideas, • discuss recent findings in the empirical trade literature.	

Admission requirements: none	**Recommended previous knowledge:** M.WIWI-VWL.0092 International Trade
Language: English	**Person responsible for module:** Prof. Dr. Udo Kreickemeier
Course frequency: each summer semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted:	Recommended semester:
twice	2 - 4

Georg-August-Universität Göttingen **Module M.WIWI-WB.0001: Scientific Programming**	3 C 1 WLH

Learning outcome, core skills: The students: • know the basic structure and operations of the programming environment MATLAB as well as the most important methods for programming with matrices, • learn the basic concepts and ways of thinking in scientific programming, • learn how to efficiently make use of advanced development tools such as the debugger and the profiler, • are able to visualize problems and create professional graphics, • are able to independently solve problems in MATLAB by their own programming – for example as part of a scientific paper.	**Workload:** Attendance time: 18 h Self-study time: 72 h

Course: Scientific Programming (Computer Exercise) *Contents*: The practical computer course provides a fundamental introduction to scientific programming with the statistical software “MathWorks MATLAB”. Using the Basic programming language is a great way to teach the essential concepts of programming and numerical data processing, and it allows students to acquire skills required in quantitative sciences. Modern lecture slides available in German and English languages, which include practical exercises, are used. By using the course material, the participants will be motivated to focus on the concepts, and they will be able to track their own progress during the course. Topics 1. Graphical User Interface 2. Data and Operations 3. Functions 4. Programming Concepts 5. Development Tools 6. 2D- und 3D-Graphics 7. Advanced Solving Algorithms	1 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Knowledge of the usage and functionality of MathWorks MATLAB. Application of MATLAB’s built-in operations and functions. Knowledge of importing, processing and statistical analysis of data. Solving short – even graphical – programming tasks. Knowledge of programming concepts such as loops and branches. Knowledge of a “good programming style”.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in statistics and mathematics
Language: English	**Person responsible for module:** Prof. Dr. Helmut Herwartz

Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module M.WIWI-WB.0012: Diverse Perspectives and Critical Reflections on 'Development' and 'Development Economics'**	6 C 2 WLH

Learning outcome, core skills: The seminar looks at a particular aspect of 'development' or 'development economics' from the perspectives of different neighbouring disciplines and aims at providing the students with an overview of the diverse perspectives. Students get to know different approaches and methodologies and learn to contrast, critically examine and synthesis these. Furthermore, students learn to read and critically assess scientific literature of different disciplines, develop a coherent argument taking the various perspectives into account and improve their academic writing. By the end of the course, students will have a more holistic understanding of the topic, are able to contextualize different perspectives and to engage in contemporary discourse across disciplines.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Diverse Perspectives and Critical Reflections on 'Development' and 'Development Economics' (Seminar) *Contents*: The seminar discusses an aspect of 'development' and 'development economics' through diverse perspectives. Elements of the course include readings from neighbouring disciplines like anthropology, political science or history on the topic, talks by invited experts from different academic disciplines and in-class discussions. The seminar is a student driven course. Before the start of the course, students choose the exact topic that will be examined. Students are also involved in curating the literature, choosing the experts that are invited and moderating the discussion sessions.	2 WLH
Examination: Term Paper (max. 10 pages) **Examination prerequisites:** Regular attendance and active participation	6 C

Examination requirements: In the paper, students demonstrate their understanding of various perspectives on a particular topic in development economics, their ability to research and critically review the academic literature of different disciplines on the topic, to critically access the different approaches, synthesize the results, develop a clear argument and write a scientific paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: irregluar	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4

Maximum number of students: 24	

Georg-August-Universität Göttingen **Module M.WIWI-WB.0016: Growth Econometrics with Stata**	3 C 2 WLH

Learning outcome, core skills: The aim of this course is to familiarize students with state-of-the-art econometric methods that can be used to estimate empirical models of economic growth. The course provides a brief overview of selected empirical issues related to economic growth and discusses in detail the alternative econometric methods that can be used to empirically investigate these issues. For each empirical question and method, relevant applications from the growth literature will be discussed in lecture and their implementation with Stata will be demonstrated in the computer lab sessions. Successful participants in this course are expected to be familiar with the pros and cons of alternative econometric tools used to estimate cross-country growth regression models and their application in Stata.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Growth Econometrics with Stata (Lecture) *Contents*: 1. Selected empirical questions on economic growth 2. Econometrics of growth 2.1 Pure cross sectional regressions: OLS, IV 2.2 Panel data approaches: pooled OLS, fixed effects estimator, random effects estimator, difference and system GMM estimators, mean-group and panel mean group estimators	2 WLH
Examination: Written examination (90 minutes) or oral examination (approx. 20 minutes)	3 C

Examination requirements: In the exam, students are expected to demonstrate their familiarity with and understanding of major econometric tools used in the research on economic growth. In addition, they are expected to write Stata codes to solve a given empirical question and interpret Stata outputs.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of econometrics
Language: English	**Person responsible for module:** Dr. Yabibal Walle
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 20	

Additional notes and regulations:

Because of the coaching of Stata applications during the lecture and limited space in the computer labs, the maximum number of students is 20.

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0001: Modeling and System Development**	6 C 2 WLH

Learning outcome, core skills: Upon successful completion, students are able to: • describe and explain the principles and elements of modeling techniques and design possibilities of systems, • apply selected methods for modeling systems independently, • select an appropriate method for modeling a task and delineate versus the benefits of other methods, • outline the development of systems in the business environment and to evaluate and to transfer this to related situations, • analyze and reflect critically selected current trends in the field of system development in group work and • work in groups on tasks with the help of acquired communication and organizational skills.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Modeling and System Development (Lecture) *Contents*: • Basics of systems, models and Software development • System survey (information retrieval and areas of analysis) • Process-oriented analysis and process modeling • Object-oriented analysis and process modeling • Design of systems • Implementation of systems • Integration of systems • Quality management in system development • Configuration management and change management • Cost estimate of system developments	2 WLH
Examination: Written examination (120 minutes) **Examination prerequisites:** Two successfully passed case studies (max. 12 pages each).	6 C

Examination requirements: Students show in the exam that they • can explain, evaluate and apply theories and concepts for modeling processes, application systems and software, evaluate and apply, • can explain and assess what they learned in the lectures regarding aspects of system development , • can analyze complex problems in system development in a short time and can identify both challenges and solutions, • are able to transfer the approaches teached in the lectures to similar problems.	

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Prof. Dr. Matthias Schumann
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0008: Change & Run IT**	6 C 4 WLH

Learning outcome, core skills: The course introduces the fundamentals and key concepts of IT Service Management (ITSM) and IT Project Management (ITPM). It covers the contents of the ITIL® framework and its core elements of the service value system. At the end of the course, participants should know the success factors for ITSM and understand how value is created, delivered, and managed by implementing industrial standards. In the ITPM segments, students are introduced to concepts and methods to manage and create IT-driven innovation utilizing agile project management practices.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Change and Run IT (Lecture) *Contents*: • Become familiar with ITSM and the service value concept • Understand the connection between ITIL® and ITSM • Understand, classify, and evaluate processes according to ITIL® • Understand and apply agile project management practices	2 WLH
Course: Change and Run IT (Exercise) *Contents*: • Learn how to apply concrete ITIL® methods and tools • Learn how to apply agile IT project management methods	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: In the module examination, the students demonstrate that they can reproduce fundamental knowledge and basic concepts of IT service management and project management. They can apply acquired knowledge within case studies in a solution-oriented manner. This includes transferring acquired knowledge to different application contexts. The attendance of guest lectures and other associated learning elements, which may be part of the module, is considered recommended to take the examination.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Lutz Maria Kolbe
Course frequency: every semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2
Maximum number of students: not limited	

Additional notes and regulations:

The module is offered in each semester. In the summer term, lectures and exercises are in person. In the winter term, only the exercise is in person; the lecture is provided as video recordings.

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0026: Machine Intelligence: Concepts and Applications**	6 C 2 WLH

Learning outcome, core skills: The course would introduce modern machine learning and AI methods with focus on real-world practical applications. The course would also consider the subject of ethical AI and practical implementation of ethical AI principles. The aspects related to privacy, explainability, and transferability of AI based systems will be covered. The participants would be able to understand and apply the state-of-the-art machine learning algorithms on a wide range of problems while addressing legal and ethical requirements.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Machine Intelligence: Concepts and Applications (Lecture) *Contents*: • Trustworthy AI • Differentially Private Machine Learning • Secure Machine Learning with Fully Homomorphic Encryption • Explainable AI • Federated Learning • Kernel Methods for Machine Learning	2 WLH
Examination: Project (submission of a project report, max. 6 pages per person)	6 C

Examination requirements: A demonstration of following capabilities: • problem formulation of a selected practical application of artificial intelligence and machine learning, • analytical/computational solution of the formulated problem, • algorithmic implementation of the solution, • computer simulations.	

Admission requirements: none	**Recommended previous knowledge:** Basics of Matrix Algebra, Basics of Signals & Systems
Language: English	**Person responsible for module:** Prof. Dr. Lutz Maria Kolbe Prof. Dr.-Ing. habil. Mohit Kumar
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0032: Information Systems Research**	12 C 2 WLH

Learning outcome, core skills: The aim of this seminar is to introduce students to scientific research and scientific writing in the field of information systems. After successful completion of this module, the students have gained in-depth insights into a specific topic in information systems research. Through the mixture of guided introduction and independent work on a clearly defined topic, students develop a basic understanding of the principles of empirical scientific work and acquire the ability to approach a research topic systematically and independently. Students can conduct a systematic review of the scientific literature and are able to develop and derive scientific solutions and findings on this foundation. Depending on their topic, they gather experiences in the application of an empirical method or the implementation of a digital solution. They develop their skills in synthesizing, conducting, presenting, and reflecting on scientific research. In addition to promoting analytical thinking, this seminar will also facilitate the improvement of English writing, presentation, and discussion skills.	**Workload:** Attendance time: 28 h Self-study time: 332 h

Course: Information Systems Research (Seminar) *Contents*: This seminar deals with current issues in information systems research. Topics include digital strategy and business models, digital platforms, sharing economy, IT innovations, the impact of technologies on decisions, interactions and lives of individuals, among others. Based on their interests, students are assigned to a specific topic to examine. The structure of the seminar is as follows: 1. Introduction to the principles of academic research and scientific writing, 2. Examination of the topic and the research question - Investigation of the theoretical and methodological foundations - Structured analysis of the current state of research - Problem solving - Analysis and structuring of the results - Reflection, 3. Preparation of the term paper, 4. Presentation and discussion of the results.	2 WLH
Examination: Term paper (max. 8000 words) and presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance	12 C

Examination requirements: • Demonstration of in-depth knowledge on the assigned topic, • proof of an understanding of scientific work, writing, and presenting in general and the application of their selected research method in particular, • evidence of the ability to abstract and reflect the results of the analysis.	

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Prof. Dr. Manuel Trenz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 3
Maximum number of students: 10	

Additional notes and regulations:

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0033: Digital Platforms**	6 C 4 WLH

Learning outcome, core skills: The objective of this course is to convey a basic understanding of the paradigms and intricacies of digital platforms and platform business models. Students will be able to apply this knowledge to critically analyze and evaluate digital platform approaches. Moreover, it equips them with the necessary theories and models to develop strategies for digital platforms and to assess current issues in the topic area quantitatively and qualitatively. In the exercise part of the course, students apply their acquired knowledge and thereby advance their problem solving skills.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Digital Platforms (Lecture) *Contents*: Digital platforms are becoming increasingly important. Two-sided markets complement, extend, and replace traditional modes of transacting in many domains. Examples include B2B and B2C e-commerce platforms, platforms for interorganizational integration, resale and auction platforms, crowd work, delivery services as well as P2P services, such as short-term accommodation sharing and ride sharing markets. Importantly, the platform principle bears several particularities which will be examined in this course. Central to the design and operation of digital platforms and associated business models is the existence of network effects, different user types and motives, and the paramount importance of reputation systems and management. Case studies and guest lectures can complement the course. Topics covered in this course include: • The economics of platforms and multi-sided markets • Platform business models • Strategies for starting digital platforms • Competition among and within digital platforms • Platform governance • User motives, types, and representations on digital platforms • Pricing strategies for and on digital platforms • Trust and reputation systems • Network analysis	2 WLH
Course: Digital Platforms (Exercise) *Contents*: Within the accompanying exercise, the students deepen and extend the knowledge and skills acquired in the lecture by means of application tasks and examples.	2 WLH
Examination: Written examination (60 minutes)	6 C

Examination requirements: • Demonstration of in-depth knowledge on the paradigms and intricacies of digital platforms and platform business models, • evidence of the ability to quantitively and qualitatively address current issues on digital platforms.	

Admission requirements: none	**Recommended previous knowledge:** basic Excel skills
Language: English	**Person responsible for module:** Prof. Dr. Manuel Trenz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0034: Digital Strategy**	6 C 4 WLH

Learning outcome, core skills: This module covers the fundamentals of digital strategy and the use of information systems realizing strategic goals. Students will be able to apply this knowledge to critically analyze and evaluate the opportunities and threats of the digital connectivity, collaborations, and channels. It equips them with the necessary concepts and approaches to develop strategies in digitized market environments. Furthermore, they gain insights into current issues in the topic area such as omnichannel strategies, digital collaboration, digital customer interactions, or ethical issues. Within the exercise part of the course, students apply their acquired knowledge to real life cases. Thereby, students will be equipped with the capability to work in a group on a specific problem and to exploit concepts and theories to address problems observed in practice.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Digital Strategy (Lecture) *Contents*: This course covers the fundamentals of digital business strategies and the opportunities and challenges arising from information systems with a particular focus on digital interactions and exchange with other market entities (i.e., firms, customers). Topics covered in this lecture include: • Digital strategy and digital transformation • Digital business models • Omnichannel strategies • Economies of networks • Information goods and servitization • Data, ethics and privacy • Digital and distributed work	2 WLH
Course: Digital Strategy (Exercise) *Contents*: In the accompanying exercise sessions, students apply their knowledge gained in the lecture by presenting and discussing practical cases.	2 WLH
Examination: Written examination (60 minutes)	4 C
Examination: Case study presentation and discussion	2 C

Examination requirements: • Demonstration of in-depth knowledge on the nature of digital strategy and the role of information systems in this context, • proof of an understanding of the opportunities when competing and collaborating digitally, • evidence of the ability to apply concepts and theories discussed to analyze selected cases.	

Admission requirements:	**Recommended previous knowledge:**

none	none
Language: English	**Person responsible for module:** Prof. Dr. Manuel Trenz
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0035: Research Seminar on Information Systems and Digitalization**	6 C 2 WLH

Learning outcome, core skills: The aim of this seminar is to provide Master and PhD students with a deeper understanding of empirical academic research, with a thematic focus on Information Systems and Digitalization. Students will primarily strengthen their analytical skills and improve their abilities to express observations and opinions about pieces of academic research and, above all, to come up with ideas on how to develop them further. The exchange and reflection on the research of others should ultimately enable students to advance their own (current or future) research projects and become better reviewers.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Research Seminar on Information Systems and Digitalization (Seminar) *Contents*: This research-centered seminar is open to anyone interested in empirical research on Information Systems and Digitalization. In the seminar we will: • critically examine selected current research work, • discuss it in regular meetings in small groups, • participate in presentations of invited authors, • debate with the authors about their research and gain additional perspectives on the development processes of their work. The willingness to read and discuss academic papers is a crucial prerequisite for participation in this course.	2 WLH
Examination: Term paper (max. 8000 words) and presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance	6 C

Examination requirements: • Demonstration of the ability to understand and critically reflect on current research work, • evidence of the ability to identify and express strengths, weaknesses, and suggestions for improvement on research work.	

Admission requirements: none	**Recommended previous knowledge:** First experience with an own research project (e.g., research seminar, thesis)
Language: English	**Person responsible for module:** Prof. Dr. Manuel Trenz
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 4

Maximum number of students: 10	

Georg-August-Universität Göttingen **Module M.WIWI-WIN.0038: Digital Health**	6 C 4 WLH

Learning outcome, core skills: Students will... • know and understand current developments (e.g. digitalization, urbanization, demographic change) and their impact on the structure and care of healthcare systems (e.g. telemedicine), • can critically examine digital infrastructures and the importance of interdisciplinary approaches (e.g. electronic patient records), • have an understanding of the application of technologies (e.g., eHealth, mHealth, wearables) in healthcare and are aware of current national and international developments, • are able to assess the opportunities and challenges of new technology such as artificial intelligence and human-computer interaction in healthcare, • can critically examine the legal and ethical challenges in digital healthcare, • can evaluate the acquired knowledge in connection with sustainable business models in the healthcare sector.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Digital Health (Lecture) *Contents*: Highly recommended for students who want an overview of current digital trends in healthcare. Contents: • Infrastructure • Personal and Global Digital Health • Artificial Intelligence & Human-Computer Interaction • Ethics and Privacy • Sustainable Business Models	2 WLH
Course: Digital Health (Exercise) *Contents*: Within the accompanying exercise, the students deepen and extend the knowledge and skills acquired in the lecture by means of application tasks and examples.	2 WLH
Examination: Written examination (90 minutes)	6 C

Examination requirements: • Demonstrate an overarching understanding of digital health's technological, business, legal, and ethical issues, • demonstrate an understanding of key technologies, applications, and models of care in healthcare and the ability to critically evaluate them, • the contents of the guest lectures are part of the examination contents.	

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Dr. Maike Greve
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2

Georg-August-Universität Göttingen **Module SK.Ara.21-2: Islamic Religion**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme an diesem Modul können, die Grundlagen der islamischen Religion mit den Schwerpunkten „Koran", „Prophetische Literatur (Hadith)", „Glaubenspraxis", „die islamischen Gruppen und Gruppierungen: Sunniten, Schiiten und andere", „islamische Theologie und Koranexegese", „islamische Philosophie" und „Sufik" benennen und erläutern.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: "Die Religion des Islams" (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Grundkenntnisse der islamischen Religion mit den Schwerpunkten „Prophetenbiografie", „Koran", „Prophetische Literatur (Hadith)", „Glaubenspraxis", „die islamischen Gruppen und Gruppierungen: Sunniten, Schiiten und andere", „islamische Theologie und Koranexegese", „islamische Philosophie" und „Sufik".	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Sebastian Günther
Course frequency: alle vier Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 70	

Georg-August-Universität Göttingen **Module SK.Ara.22-1: Islamic History and Culture II**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme an diesem Modul können die Studierenden die wichtigsten Elemente der islamischen Geschichte, Politik und Kultur ab ca. 1500 bis in die Gegenwart mit den Schwerpunkten „Nordafrika" „Osmanisches Reich", „Iran nach 1500", „der Islam in Süd- und Südostasien", „Islam und Kolonialismus", „Entstehung der gegenwärtigen Staatenwelt", „politische Ideologie in der neuzeitlichen islamischen Welt" und „die islamische Diaspora" benennen und erläutern.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Geschichte und Kultur des Islams II (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Grundkenntnisse der neueren islamischen Geschichte mit den Schwerpunkten „Nordafrika", „Osmanisches Reich", „Iran nach 1500", „der Islam in Süd- und Südostasien", „Islam und Kolonialismus", „Entstehung der gegenwärtigen Staatenwelt", „politische Ideologie in der neuzeitlichen islamischen Welt", „die islamische Diaspora".	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Irene Schneider
Course frequency: alle vier Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 70	

Georg-August-Universität Göttingen **Module SK.Ara.22-2: Islamic Law**	3 C 2 WLH

Learning outcome, core skills: Nach erfolgreicher Teilnahme an diesem Modul können die Studierenden die Grundlagen der Entwicklung der islamischen Rechtswissenschaft (fiqh) mit den Schwerpunkten „Rechtsquellen", „Entwicklung in der Frühzeit", „die Rechtsschulen", „die Sonderentwicklung des schiitischen Rechts", „Rechtsentwicklung im Zeitalter des Kolonialismus" und „moderne Nationalstaaten und islamische Rechtsfiguren" wie auch „islamisches Recht in Europa" zu benennen und zu erläutern.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: "Islamisches Recht" (Lecture)	2 WLH
Examination: Written examination (60 minutes)	3 C

Examination requirements: Grundkenntnisse der Entwicklung des islamischen Rechts,Grundlagen der Entwicklung der islamischen Rechtswissenschaft (fiqh) mit den Schwerpunkten „Rechtsquellen", „Entwicklung in der Frühzeit", „die Rechtsschulen", „die Sonderentwicklung des schiitischen Rechts", „Rechtsentwicklung im Zeitalter des Kolonialismus" und „moderne Nationalstaaten und islamische Rechtsfiguren" wie auch „islamisches Recht in Europa".	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Irene Schneider
Course frequency: alle vier Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 70	

Georg-August-Universität Göttingen **Module SK.Ara.526-1: Second Language of the Arab and Muslim World I**	6 C 4 WLH

Learning outcome, core skills: Upon successful completion of this module, students are able to read and write the script of the language taught. They will also be capable to understand the basic rules of the phonetics, syllable structure, morphology, word formation and syntax of the respective language, and apply them in simple exercises and translation situations. They furthermore have a basic knowledge of the vocabulary of the respective language.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Language course	4 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Mastery of the script of the language taught. Knowledge of the main elements of the grammar and word formation as well as the basic vocabulary of the respective language. Active application of this knowledge in exercises and translations.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: Infrequently	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.Ara.526-2: Second Language of the Arab and Muslim World II**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Upon successful completion of this module (a continuation of SK.Ara.526-1), students are able to explain the rules of the morphology, word formation and syntax of the language taught at an advanced level. They are also capable – in the case of modern languages – of having short conversations and of communicating at a basic level with a solid vocabulary, or – in the case of ancient languages – of understanding and translating simple texts.	Attendance time: 56 h Self-study time: 124 h

Course: Language course	4 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular participation **Examination requirements:** Advanced knowledge of the main elements of the grammar and word formation of the language taught. Substantial basic vocabulary of the respective language. Active use in exercises and translations.	6 C

Admission requirements: SK.Ara.526-1	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: Infrequently	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.Ara.701: Arabic Language Course in the Middle East**	6 C

Learning outcome, core skills: Students actively participate in an Arabic language course (online or in presence) offered at one of our partner universities or another accredited academic institute in North Africa or the wider Middle East. They gain skills to using Arabic actively as an academic language, orally and in writing. Students thus acquire firsthand access to the understanding of the cultural diversity and the intellectual pluralism within modern Arab societies, which broadens their intercultural skills and enables them to participate actively and constructively in public debates concerning Islamicate societies.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Arabic language course	
Examination: Written examination (60 minutes) or oral examination (approx. 20 minutes) **Examination prerequisites:** Proof of successful attendance of a language course (minimum 56 hours per semester) in text form **Examination requirements:** Evidence of Arabic language proficiency, orally and in writing.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: Arabisch	**Person responsible for module:** Akram Bishr
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.Ara.702: Arabic-Islamic Studies Abroad**	6 C

Learning outcome, core skills: Students actively participate in an Arabic and/or Islamic studies seminar taught in Arabic (online or in presence) at one of our partner universities or another accredited academic institution in North Africa or the wider Middle East. They improve their skills to use Arabic actively as an academic language and familiarize themselves with respective methods and theories. Students thus acquire an advanced understanding of the cultural diversity and the intellectual pluralism within modern Arab societies, which broadens their intercultural skills and enables them to participate actively and constructively in public debates concerning Islamicate societies.	**Workload:** Attendance time: 0 h Self-study time: 180 h

Course: Arabic language seminar	
Course: Independent Studies	
Examination: Oral Presentation (approx. 20 minutes) **Examination prerequisites:** Proof of successful attendance (at least 56 hours per semester) in text form **Examination requirements:** Students will be able to contribute to scholarly discussions in Arabic and deliver an oral presentation.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: Arabisch	**Person responsible for module:** Prof. Dr. Kata Ilona Moser
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.Bio-NF.7001: Neurobiology**	3 C 2 WLH

Learning outcome, core skills: The students should acquire comprehension in form and function of neurons and their anatomical and physiological features (genetics, subcellular organization, resting membrane potential, action potential generation, stimulus conduction, transmitter release, ion channels, receptors, second messenger cascades, axonal transport). The students acquire knowledge of the physiological basics of sensory systems (olfactory, gustatory, acoustic, mechanosensory and visual perception) as well as motor control. Based on this the students educe understanding for the relation between neuronal circuits and simple modes of behavior (central pattern generators, reflexes, and taxis movements). The students should conceptually learn how neuronal connections are modified by experience (cellular mechanisms of learning and memory) and should learn different types of modification of behavior based on experience and neuronal substrates. The students should acquire fundamental insight into the organization and function of brains and autonomous nervous systems of mammals and invertebrates. The neurobiological basis of behavioral control (orientation, communication, circadian rhythm and sleep as well as motivation and metabolism) is explained. The students will learn physiological and cellular mechanisms of aging and of neurodegenerative diseases.	**Workload:** Attendance time: 30 h Self-study time: 60 h

Course: Neurobiology (Lecture)	2 WLH
Examination: Written examination (90 minutes)	3 C

Examination requirements: The students should have the ability to assess coherence and facts of statements from the field of neurobiology; they should be able to answer questions on the structure and function of neurons and neuronal circuits. Furthermore they should be able to describe and compare neuronal basics of behavioral control, their experience-dependent modification and conceptual mechanisms of complex behavior; they should be able to describe and compare physiological mechanisms of sensory perception and different sensory modalities; they should be able to describe physiological and cellular mechanisms of aging and of neurodegenerative diseases.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in Biology
Language: English	**Person responsible for module:** Prof. Dr. Andrè Fiala
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 30	

Additional notes and regulations:
The combination of this module with module SK.Bio.7001 is not possible.

Georg-August-Universität Göttingen **Module SK.Bio.7001: Neurobiology**	6 C 4 WLH

Learning outcome, core skills: The students should acquire comprehension in form and function of neurons and their anatomical and physiological features (genetics, subcellular organization, resting membrane potential, action potential generation, stimulus conduction, transmitter release, ion channels, receptors, second messenger cascades, axonal transport). The students acquire knowledge of the physiological basics of sensory systems (olfactory, gustatory, acoustic, mechanosensory and visual perception) as well as motor control. Based on this the students educe understanding for the relation between neuronal circuits and simple modes of behavior (central pattern generators, reflexes, and taxis movements). The students should conceptually learn how neuronal connections are modified by experience (cellular mechanisms of learning and memory) and should learn different types of modification of behavior based on experience and neuronal substrates. The students should acquire fundamental insight into the organization and function of brains and autonomous nervous systems of mammals and invertebrates. The neurobiological basis of behavioral control (orientation, communication, circadian rhythm and sleep as well as motivation and metabolism) is explained. The students will learn physiological and cellular mechanisms of aging and of neurodegenerative diseases.	**Workload:** Attendance time: 30 h Self-study time: 150 h

Course: Neurobiology (Lecture)	2 WLH
Course: Neurobiology (Seminar)	2 WLH
Examination: Written examination (90 minutes) **Examination prerequisites:** regular seminar participation and oral presentation (not graded)	6 C

Examination requirements: The students should have the ability to assess coherence and facts of statements from the field of neurobiology; they should be able to answer questions on the structure and function of neurons and neuronal circuits. Furthermore they should be able to describe and compare neuronal basics of behavioral control, their experience-dependent modification and conceptual mechanisms of complex behavior; they should be able to describe and compare physiological mechanisms of sensory perception and different sensory modalities; they should be able to describe physiological and cellular mechanisms of aging and of neurodegenerative diseases.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in Biology
Language: English	**Person responsible for module:** Prof. Dr. Andrè Fiala
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6

Maximum number of students: 30	

Georg-August-Universität Göttingen **Module SK.Bio.7002: Basic virology**	3 C 2 WLH

Learning outcome, core skills: The students will become familiar with the architecture of viruses and will learn how these agents replicate and evade the immune response of the host. Moreover, it will be discussed how viruses cause disease and how this process can be prevented by antivirals and vaccines. The lectures will focus on important human pathogens, including HIV, influenza and herpesviruses. Upon successful completion of the module, the students will be able to classify viruses and will have an understanding of central mechanisms underlying virus replication and pathogenesis and their inhibition by therapy and vaccination.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Basic Virology (Lecture)	2 WLH
Examination: Written examination (45 minutes)	3 C

Examination requirements: The students must assess whether statements regarding basic aspects of virology, including virus classification, viral replication, virus-host interactions, pathogenesis, immune evasion and antiviral therapy and vacciantion, are correct.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in Biology
Language: English	**Person responsible for module:** Prof. Dr. Stefan Pöhlmann
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 3 - 6
Maximum number of students: 100	

Georg-August-Universität Göttingen **Module SK.Bio.7004: Environmental microbiology**	3 C 2 WLH

Learning outcome, core skills: The students will acquire a comprehensive understanding of basic microbial processes in the environment. Students will learn how microorganisms are effective in biogeochemical cycles and how these cycles evolved in Earth's history and shaped our biosphere. They will gain knowledge about important microbial habitats (terrestrial/ aquatic/extreme), and their microbial diversity. They will be introduced in the application of microorganisms in bioremediation and environmental biotechnology.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Environmental microbiology (Lecture)	2 WLH
Examination: Oral Presentation (approx. 5 minutes)	3 C

Examination requirements: Revising a specific topic in environmental microbiology, compilation of data and preparation/short presentation of a scientific poster.	

Admission requirements: B.Bio.118	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Rolf Daniel PD Dr. Michael Hoppert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module SK.Bio.7007: Methods in molecular virology**	3 C 2 WLH

Learning outcome, core skills: The students are introduced to the repertoire of methods used in virological research and diagnostics. The course focuses on current developments and seminal experiments from the past. The students will train their ability to extract scientific methods from the literature by themselves and to devise their own strategies to tackle a scientific problem. Students are encouraged to develop their own strategies to solve a specific problem and to discuss their strategies with their fellow students. The students are encouraged to come up with alternative approaches. The students' solutions are compared to published techniques, which are presented in the form of a short talk by a student or the teacher.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Methods in molecular virology (Seminar)	2 WLH
Examination: Lecture (approx. 30 minutes), not graded **Examination prerequisites:** Regular participation in the seminar	3 C

Examination requirements: Understanding and scientific presentation of methods in molecular virology in a seminar talk (approx. 20 minutes) with subsequent discussion (approx. 10 minutes).	

Admission requirements: none	**Recommended previous knowledge:** basic knowledge in virology (e.g. SK.Bio.7002), basic knowledge in molecular biology
Language: English	**Person responsible for module:** Dr. Alexander Hahn
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.Bio.7008: Molecular biology of HIV replication and pathogenesis**	2 C 1 WLH

Learning outcome, core skills: The students will learn the molecular mechanisms underlying the different steps of HIV replication, including entry, reverse transcription, genome integration, gene expression, assembly, release and maturation. Moreover, innate antiviral defenses and viral countermeasures will be discussed. In addition, insights into humoral immune responses against HIV and challenges associated with the generation of an effective vaccine will be provided. Finally, concepts and components of antiretroviral therapy will be introduced and the zoonotic origin of HIV will be discussed. Students attending the lectures will acquire an understanding of central mechanisms underlying HIV replication and pathogenesis and their blockade by immune responses and antiviral therapy.	**Workload:** Attendance time: 14 h Self-study time: 46 h

Course: Molecular biology of HIV replication and pathogenesis (Lecture)	1 WLH
Examination: Written examination (45 minutes)	2 C

Examination requirements: The students should be able to respond to questions concerning basic aspects of HIV replication, pathogenesis, immune responses and antiviral therapy.	

Admission requirements: none	**Recommended previous knowledge:** SK.Bio.7002
Language: English	**Person responsible for module:** Prof. Dr. Stefan Pöhlmann
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module SK.Bio.7009: Learning with a core facility - protein analytics using mass spectrometry**	3 C 3 WLH

Learning outcome, core skills: In the first part of the course, the students get an introduction to the analysis of proteins using liquid chromatography-coupled mass spectrometry (LCMS), and they will prepare peptide samples themselves for this analysis technique in a practical part. Protein samples derive from current projects of different research groups at the Göttingen Campus. In the second part, the students will learn how to analyze the LCMS raw data for identification and relative quantification of proteins. Approaches for the statistical validation of the results will be introduced. The students will get the opportunity to analyze data on their own with state-of-the-art software tools. They will present their results of their project to their fellow students in a concluding seminar at the end of the course.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Protein analytics using mass spectrometry (Course) Practical course and data analysis software training are supervised by members of two core facilities – LCMS Protein Analytics and Medical Biometry and Statistical Bioinformatics	3 WLH
Examination: Oral Presentation (approx. 15 minutes), not graded **Examination prerequisites:** Regular participation in the practical course	3 C

Examination requirements: The students should present the results of their experiment in English.	

Admission requirements: none	**Recommended previous knowledge:** B.Bio.129 or B.Bio.118 or B.Bio.112 or equivalent Practical experience with protein techniques (e.g. SDS-PAGE)
Language: English	**Person responsible for module:** Dr. Oliver Valerius
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 5 - 6
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.A1.1-4Std: German Language Course - A1.1**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden können • einige vertraute, alltägliche Ausdrücke und einfache Sätze verstehen und verwenden, die auf die Befriedigung konkreter Bedürfnisse im täglichen Leben und im Leben auf dem Campus zielen; • sich und andere vorstellen und ihren Gesprächspartner*innen Fragen zu ihrer Person stellen z.B. wo sie wohnen, welche Menschen sie kennen oder welche Dinge sie bei sich haben – und können auf Fragen dieser Art Antwort geben; • sich auf einfache Art verständigen, wenn die Gesprächspartner*innen langsam und deutlich sprechen und den Lernenden helfen.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Deutsch - Sprachkurs A1.1	4 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als drei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen dem Niveau A1.1 (GER) entsprechende Kompetenzen in Hör-Seh- und Leseverstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	6 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.A1.2-4Std: German Language Course - A1.2**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden können • viele vertraute, alltägliche Ausdrücke und einfache Sätze verstehen und verwenden, die auf die Befriedigung konkreter Bedürfnisse im täglichen Leben und auf dem Campus zielen; • sich und andere vorstellen und Gesprächspartner*innen Fragen zu ihrer Person stellen, z. B. zu den Themen Pläne und Termine, Gesundheit, Lebensgewohnheiten, und können auf Fragen dieser Art Antwort geben; • sich auf einfache Art verständigen, wenn die Gesprächspartner*innen langsam und deutlich sprechen und den Lernenden helfen.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Deutsch - Sprachkurs A1.2	4 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als drei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen dem Niveau A1.2 (GER) entsprechende Kompetenzen in Hör-Seh- und Leseverstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	6 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.A2.1-4Std: German Language Course - A2.1**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden können: • Sätze und häufig gebrauchte Ausdrücke verstehen, die Bereiche von ganz unmittelbarer Bedeutung thematisieren, z.B. persönliche Informationen über den eigenen Alltag und Studienleben; • sich in einfachen, routinemäßigen Situationen verständigen, in denen es um einen einfachen und direkten Austausch von Informationen über vertraute und geläufige Sachverhalte geht; • mit einfachen Mitteln die eigene Herkunft und Ausbildung, die direkte Umgebung und Sachverhalte im Zusammenhang mit unmittelbaren Bedürfnissen beschreiben, z.B. Mensabesuch.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Deutsch - Sprachkurs A2.1	4 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als drei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen dem Niveau A2.1 (GER) entsprechende Kompetenzen in Grammatik, Wortschatz, Phonetik sowie in Hör- und Leseverstehen und Schreiben.	6 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.A2.2-4Std: German Language Course - A2.2**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden können: • Sätze und häufig gebrauchte Ausdrücke verstehen, die mit Bereichen von ganz unmittelbarer Bedeutung zusammenhängen z.B. persönliche Informationen, allgemeine Informationen im Alltag und Studienleben, Kommunikation auf dem Campus; • sich in einfachen, routinemäßigen Situationen verständigen, in denen es um einen einfachen und direkten Austausch von Informationen über vertraute und geläufige Dinge geht; • mit einfachen Mitteln die eigene Herkunft und Ausbildung, die direkte Umgebung und Dinge im Zusammenhang mit unmittelbaren Bedürfnissen beschreiben.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Deutsch - Sprachkurs A2.2	4 WLH
Examination: Written examination (60 minutes) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als drei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen dem Niveau A2.2 (GER) entsprechende Kompetenzen in Grammatik, Wortschatz, Phonetik sowie in Hör- und Leseverstehen und Schreiben.	6 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.Gr-B1-2Std: German Grammar B1**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden besitzen in Grammatik eine Kompetenz auf B1-Niveau (GER) und können • ein Repertoire von häufig verwendeten Redefloskeln und Wendungen, die sie für das Leben auf dem Campus benötigen, ausreichend korrekt verwenden.	**Workload:** Attendance time: 24 h Self-study time: 66 h

Course: Deutsch Grammatik B1	2 WLH
Examination: Portfolio (max. 4 pages) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen in Grammatik eine Kompetenz auf B1-Niveau (GER).	3 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.Gr-B2-2Std: German Grammar B2**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden besitzen in Grammatik eine Kompetenz auf B2-Niveau (GER). Sie beherrschen die Grammatik so, dass sie diese auf die Kommunikation im Studium und Studienleben weitgehend fehlerfrei anwenden können.	**Workload:** Attendance time: 24 h Self-study time: 66 h

Course: Deutsch Grammatik B2	2 WLH
Examination: Portfolio (max. 6 pages) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen in Grammatik eine Kompetenz auf B2-Niveau (GER).	3 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.Gr-C1-2Std: German Grammar C1**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden besitzen in Grammatik eine Kompetenz auf C1-Niveau (GER) und können im Kontext von Studium und Studienleben beständig ein hohes Maß an grammatischer Korrektheit beibehalten.	**Workload:** Attendance time: 24 h Self-study time: 66 h

Course: Deutsch Grammatik C1	2 WLH
Examination: Portfolio (max. 10 pages) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen in Grammatik eine Kompetenz auf C1-Niveau (GER).	3 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.LK-B2-2Std: German Discursive Cultural Studies B2**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden können: • ausgewählte Aspekte (hochschul)politischer, wirtschaftlicher und rechtlicher Systeme in ihrer Kulturenbedingtheit erkennen und in Ansätzen reflektieren; • sich über aktuelle Fragen in diesen Bereichen informieren und dazu in Ansätzen mündlich und schriftlich Stellung nehmen; • in vertrauten Situationen interkulturell kompetent sprachlich und nonverbal handeln und ggf. auf Konfliktsituationen eingehen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Deutsch - Diskursive Landeskunde im Studium und Studienleben B2	2 WLH
Examination: Portfolio (max. 8 pages) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als drei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen dem Niveau C1 (GER) entsprechende Kompetenzen in Hör-Seh- und Lese-Verstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	3 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorherigen Niveaustufe	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.SP-B2/C1-1Std: Communication Skills in Action B2/ C1**	1 C 1 WLH

Learning outcome, core skills: Die Studierenden können • sich über ausgewählte aktuelle Themen kommunikativ verständigen und dabei angemessene Medien nutzen.	**Workload:** Attendance time: 14 h Self-study time: 16 h

Course: Deutsch - Sprachpraxis B2/C1	1 WLH
Examination: Projektarbeit (Entsprechend ihres Sprachniveaus fertigen die Studierenden eine Projektarbeit an, in der sie bearbeitete Themen medial aufbereiten, z.B. als Podcast. Sie reflektieren ihre Tätigkeit im Umfang von max. 1 Seite.) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen ab dem Niveau B2 (GER) entsprechende Kompetenzen in Hör-Seh- und Leseverstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	1 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** keine
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.SP-B2/C1-2Std: Communication Skills in Action B2/ C1**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden können • sich über ausgewählte aktuelle Themen kommunikativ verständigen und dabei angemessen nutzen.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Deutsch - Sprachpraxis B2/C1	2 WLH
Examination: Projektarbeit (Entsprechend ihres Sprachniveaus fertigen die Studierenden eine Projektarbeit an, in der sie bearbeitete Themen medial aufbereiten, z.B. als Podcast. Sie reflektieren ihre Tätigkeit im Umfang von max. 2 Seiten.) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen ab dem Niveau B2 (GER) entsprechende Kompetenzen in Hör-Seh- und Leseverstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	3 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** keine
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.DaF.SP-B2/C1-4Std: Communicational Skills in Action B2/C1**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden können • sich über ausgewählte aktuelle Themen kommunikativ verständigen und dabei angemessene Medien nutzen.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Deutsch - Sprachpraxis B2/C1	4 WLH
Examination: Projektarbeit (Entsprechend ihres Sprachniveaus fertigen die Studierenden eine Projektarbeit an, in der sie bearbeitete Themen medial aufbereiten, z.B. als Podcast. Sie reflektieren ihre Tätigkeit im Umfang von max. 4 Seiten.) **Examination prerequisites:** regelmäßige Teilnahme mit nicht mehr als zwei Fehlsitzungen **Examination requirements:** Die Studierenden besitzen ab dem Niveau B2 (GER) entsprechende Kompetenzen in Hör-Seh- und Leseverstehen, im Schreiben und Sprechen, in Grammatik sowie in Phonetik. In der Abschlussprüfung werden ausgewählte Kompetenzbereiche des Sprachniveaus geprüft.	6 C

Admission requirements: Einstufungstest mit entsprechendem Ergebnis oder Belegung einer vorhergehenden Niveaustufe	**Recommended previous knowledge:** keine
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module SK.IKG-FIT.01: Intercultural Competences in Work Environments**	4 C 1 WLH

Learning outcome, core skills:	**Workload:**
After successfully participating in this workshop, students know how to • Reflect on and expand their own cultural perspectives in work environments • Act in an intercultural sensitive way in work environments • Collaborate effectively in intercultural working teams • Navigate cultural differences in work environments Students have knowledge on • The definition of culture and intercultural competence • Cultural concepts and intercultural competence • The use of interactive methods to reflect on and expand their subjective cultural perspectives and experiences in work environments • A responsible usage of AI tools in intercultural interaction, e.g. recognising stereotypes in AI products • Navigating cultural differences in work environments, supporting their successful transition into the German job market.	Attendance time: 14 h Self-study time: 106 h

Course: Intercultural Competences in Work Environments (Seminar) *Contents*: Working in intercultural teams: Focus Business Context; Effective collaboration in intercultural work environments	1 WLH
Examination: Group work and reflection (max. 10 pages), not graded **Examination prerequisites:** Regular participation in the sessions **Examination requirements:** Reflection and expansion of cultural perspectives in work environments, intercultural sensitivity in work environments, effective collaboration in intercultural teams, navigation of cultural differences in work environments.	4 C

Admission requirements: English C1 or German C1	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Lefkothea Sinjari
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:

This workshop is offered within the framework of the InDiGU-PLUS project and part of the certificate International.

Georg-August-Universität Göttingen **Module SK.IKG-IIA.01: Theoretical Foundations of Counseling in Intercultural Contexts**	5 C 2 WLH

Learning outcome, core skills:	**Workload:**
Die Studierenden kennen theoretische Grundlagen zu Beratungsansätzen in interkulturellen Kontexten. Nach Abschluss des Moduls sind Studierende in der Lage, fundert einen der Schwerpunkte Sprachlernberatung, Schreibberatung in mehrsprachigen Kontexten oder Beratung für interkulturelle Kompetenzen zu wählen. Die Studierenden können ausgewählte Beratungsansätze und -konzepte • sachlich korrekt wiedergeben, • diese gegenüber anderen Ansätzen differenziert darstellen, • begründet kritisieren. Zudem können sie • die wissenschaftlichen Grundlagen auf konkrete Fälle anwenden, um Verlauf und Struktur von Beratungen zu analysieren.	Attendance time: 28 h Self-study time: 122 h

Course: Seminar zum Thema "Ansätze und Konzepte von Beratung in interkulturellen Kontexten" (Seminar)	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** regelmäßige Teilnahme an der Lehrveranstaltung **Examination requirements:** In dem Portfolio werden wissenschaftsfundiert das eigene Handeln sowie Beratungshandeln reflektiert. Inhalte aus der Lehrveranstaltung werden angewendet und vertieft.	5 C

Admission requirements: Keine	**Recommended previous knowledge:** Studienerfahrungen
Language: German, English	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.IKG-IKK.02: Introduction to Intercultural Competence - English Language**	4 C 1 WLH

Learning outcome, core skills: Intercultural perspectives expand understanding of subject- or context-specific situations and promote the exchange of knowledge and experience between members of different cultures and social or professional groups. Students who have successfully participated in this module will be able to: • Understand the implications of a culturally determined diversity • Identify basic cultural values and social identities • Describe cultures using theoretical frameworks • Develop strategies for more efficient intercultural communication • Describe constructions of culture • Identify and adapt communication styles Shift frames of reference and change perspectives	**Workload:** Attendance time: 14 h Self-study time: 106 h

Course: Block Course	1 WLH
Examination: Portfolio/E-Portfolio (max. 15 pages), not graded	4 C

Examination requirements: Reflection and adaptation on communication style, theoretical framework on intercultural competence, intercultural learning, developing strategies for effective intercultural communication, transfer of theoretical concept onto study-relevant cases.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Alexandra Schreiber, MA
Course frequency: irregular intervals	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.IKG-IKK.12-1: Intercultural Competence Training Focusing on “Arabic” and “Western” Perspectives (Joint Classroom Format)**	6 C 2 WLH

Learning outcome, core skills: Interkulturelle Aspekte erweitern fachspezifische Themen und befördern den Wissens- und Erfahrungsaustausch. Kulturallgemeine Sensibilisierung zusammen mit aktuellen kulturellen und gesellschaftlichen Fragestellungen der modernen, arabisch-sprachigen Welt schaffen Grundlage für Diskussion und Transfer zu fachspezifischen Themen. Die Durchführung im Joint Classroom Format ermöglicht den Studierenden darüber hinaus den direkten Kontakt und Austausch mit Studierenden aus arabischen Kulturkontexten und gleichzeitig die Erweiterung ihrer digitalen und medialen Kompetenzen. Nach erfolgreicher Absolvierung des Moduls können Studierende • Aspekte interkultureller Kommunikation definieren und Dimensionen interkultureller Kompetenz erklären • Auswirkungen kultureller Einflüsse auf Verhalten und Kommunikation verstehen • Facetten arabisch-sprachiger Gesellschaften des Nahen Ostens und Nordafrikas (MENA-Region) reflektieren • Kulturelle Aspekte des arabisch-sprachigen Raums unter dem Gesichtspunkt von Globalisierung analysieren • Mit arabisch-sprachigen Kommilitoninnen und Kommilitonen in einer Fremdsprache im virtuellen Kontext interagieren und in Kollaboration Projekte planen	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Blockveranstaltung (mit Online- und Selbststudien-Einheiten)	2 WLH
Examination: Portfolio/E-Portfolio (zusammen max. 10 Seiten), not graded **Examination prerequisites:** regelmäßige Teilnahme **Examination requirements:** Reflexion eigener kultureller Verständnisse und Einstellungen, Kenntnisse der theoretischen Grundlagen interkultureller Kommunikation, Aspekte des modernen arabisch-sprachigen Raums zu Kultur, Gesellschaft, globalen Verbindungen mit Perspektive von Globalisierung analysieren	6 C

Admission requirements: none	**Recommended previous knowledge:** Kulturelle und gesellschaftliche Hintergründe des modernen arabisch-sprachigen Raums; virtuelle Kommunikationsplattformen, z.B. Zoom
Language: German, English	**Person responsible for module:** Alexandra Schreiber, MA
Course frequency:	**Duration:**

unregelmäßig	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 15	

Additional notes and regulations:
Angebot in Zusammenarbeit mit Lehrenden des Seminars für Arabistik/Islamwissenschaft I

Georg-August-Universität Göttingen **Module SK.IKG-IKK.15: Serious Games for Intercultural Competence**	6 C 2 WLH

Learning outcome, core skills: After successfully participating in this workshop, participants have the ability to • define and reflect intercultural competencies in general and in specific contexts, • reflect on own intercultural competencies and communication skills, • define learning outcomes for learning units intercultural competencies, • define facets of serious games as a method to create intercultural learning units, • define potential and limits of serious games for intercultural learning, • understand and reflect on the mutual influence of methods, participants and trainers.	**Workload:** Attendance time: 21 h Self-study time: 159 h

Course: Block Course *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 15 pages), not graded **Examination requirements:** Knowledge about culture, intercultural competencies and serious games. Reflection and understanding subconscious structures of culture.	6 C

Admission requirements: None	**Recommended previous knowledge:** Interest in play, digital learning and intercultural communication
Language: English	**Person responsible for module:** Alexandra Schreiber, MA
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module SK.IKG-IKK.16: Intercultural Competence in Virtual Exchange - English Language**	6 C 2 WLH

Learning outcome, core skills:	**Workload:**
Intercultural competencies are at the core of thriving in international, cross-cultural contexts by taking perspective, communicating effectively and exchanging knowledge and experiences. This workshop is project-based and being conducted in a virtual exchange setting with the opportunity for relevant and authentic intercultural exchange within interdisciplinary diverse student cohorts to broaden intercultural competencies and 21st century skills. Upon completion of this course, participants will be able to: • Determine theoretical frameworks for intercultural communication and competencies and apply these to own projects. • Understand their own cultural background and compare cultural elements and expectations with the international, intercultural student cohort. • Analyze how cultural elements influence perception and behavior. • Develop communicative competence, critial thinking and digital literacies within the framework of online interdisciplinary contexts. • Build personal relationships and experience working in virtual teams. • Apply and evaluate strategies for appropriate and effective communication within experiential and collaborative contexts.	Attendance time: 28 h Self-study time: 152 h

Course: Blocked Sessions (synchronus and asynchronus phases) (Block course)	2 WLH
Examination: Portfolio/E-Portfolio (max. 15 pages) **Examination prerequisites:** Regular participation. **Examination requirements:** Reflection of learning journey.	6 C

Admission requirements: None.	**Recommended previous knowledge:** Being familiar with working with virtual conference tools, e.g. Zoom.
Language: English	**Person responsible for module:** Alexandra Schreiber, MA
Course frequency: Irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 1
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.02: From Reading to Writing Academic Texts for Undergraduate Students**	4 C 1 WLH

Learning outcome, core skills: Nach Abschluss des Moduls sind die Studierenden in der Lage, unterschiedliche Lesestrategien zielgerichtet für verschiedene Zwecke einzusetzen und somit wissenschaftliche Literatur – auch unter kritischer, reflektierter Nutzung von KI - effizient zu rezipieren, gelesene Literatur in angemessener Weise aufzubereiten und diese funktional in eigenen akademischen Texten einzubringen.	**Workload:** Attendance time: 14 h Self-study time: 106 h

Course: Workshop: Vom Lesen zum Schreiben akademischer Texte/From Reading to Writing Academic Texts - MultiConText (Block course) *Course frequency:* irregular	1 WLH
Examination: Portfolio/E-Portfolio (max. 20 pages) **Examination prerequisites:** Lese-Schreibaufgaben (max. 15 Seiten); regelmäßige Teilnahme **Examination requirements:** Kompetenzen in akademischen Lesestrategien, Textartenkenntnisse zur Vorbereitung komplexerer akademischer Texte, Kompetenzen im Umsetzen von gelesener wissenschaftlicher Literatur in eigene akademische Teiltexte.	4 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:**
Language: German, English	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.03: From Reading to Writing Academic Texts for Graduate Students**	4 C 1 WLH

Learning outcome, core skills: Nach Abschluss des Moduls sind die Studierenden in der Lage, unterschiedliche Lesestrategien zielgerichtet für verschiedene Zwecke einzusetzen und somit wissenschaftliche Literatur – auch unter kritischer, reflektierter Nutzung von KI - effizient zu rezipieren, gelesene Literatur in angemessener Weise aufzubereiten und diese funktional in eigenen komplexen akademischen Texten einzubringen und daraus eigenständige akademische Argumentationen zu entwickeln.	**Workload:** Attendance time: 14 h Self-study time: 106 h

Course: Workshop: Vom Lesen zum Schreiben akademischer Texte/From Reading to Writing Academic Texts - MultiConText (Block course) *Course frequency:* irregular	1 WLH
Examination: Portfolio/E-Portfolio (max. 20 pages) **Examination prerequisites:** Lese-Schreibaufgaben (max. 15 Seiten), regelmäßige Teilnahme **Examination requirements:** Kompetenzen in akademischen Lesestrategien, Textartenkenntnisse zur Vorbereitung komplexerer akademischer Texte, Kompetenzen im Umsetzen von gelesener wissenschaftlicher Literatur in eigene akademische Teiltexte.	4 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.07: Preparing for and Writing Exams**	3 C 1 WLH

Learning outcome, core skills: Nach Abschluss des Moduls sind die Studierenden in der Lage, • verschiedene Klausurformen mit ihren charakteristischen Fragestilen zu differenzieren, • ihre Klausurvorbeitung und ihr Bearbeitungsverhalten im Rahmen der Klausur diesen unterschiedlichen Klausurformen anzupassen, • Aspekte wie Zeitmanagement, ausgewählte Lern- und Mnemotechniken für die eigene Klausurvorbereitung effizient einzusetzen.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Workshop: Klausuren vorbereiten und schreiben / How to Prepare and Write an in-class exam (Block course) *Course frequency:* irregular	1 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Schreibaufgaben (max. 15 Seiten), regelmäßige Teilnahme **Examination requirements:** reflektiertes Wissen über verschiedene Klausurformen, Lern- und Memotechniken; Kompetenzen im Zeitmanagement.	3 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 1 - 6; Master: 1 - 4
Maximum number of students: 15	

Additional notes and regulations:
empfohlen für Studierende, die in diesem Semester Klausuren schreiben

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.13: Academic Writing Partnerships**	4 C 2 WLH

Learning outcome, core skills: Nach Abschluss des Moduls verfügen die Studierenden über reflektiertes Wissen über unterschiedliche akademische Schreibtraditionen und über wissenschaftskulturell verankerte Textsorten. Sie sind in der Lage, konstruktives Feedback zu Textentwürfen zu geben und zu empfangen und sich in interkulturellen Situationen reflektiert auszutauschen.	**Workload:** Attendance time: 28 h Self-study time: 92 h

Course: Workshop (Block course) *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Schreibaufgaben (max. 15 Seiten), regelmäßige Teilnahme **Examination requirements:** reflektiertes Wissen über unterschiedliche akademische Schreibtraditionen, Kompetenzen in wissenschaftskulturell verankerten akademischen Textarten, reflektiertes Wissen über Feedbackstrategien.	4 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Bachelor: 1 - 6; Master: 1 - 4
Maximum number of students: 15	

Additional notes and regulations: Zertifikat Internationales

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.40: Academic Writing and Academic Practice in Multilingual Contexts in the Humanities and the Social Sciences**	6 C 2 WLH

Learning outcome, core skills: After completing this module, students of Humanities and Social Sciences are able to apply academic writing strategies and practice in multilingual contexts within their own working processes. Students are empowered to use their own multilingualism in their academic practice and during their writing process and to think these processes across and beyond languages in the sense of a multi- and translingual approach. Students know how to analyse linguistic features of academic texts. They know about different individual academic writing imprints and are aware of academic standards of their discipline. They are able to make use of their linguistic resources to develop their own academic voice in a constructive and purposeful way. Students are able to give and receive peer feedback and to revise multilingual texts. They have a general understanding of the risks and potentials of using AI in writing.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Workshop Schreiben in den Geistes- und Sozialwissenschaften im mehrsprachigen Kontext. Writing in the Humanities and Social Sciences across languages *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** regular attendance; Written tasks (max. 20 p.) **Examination requirements:** Competences in multi- and translingual academic writing and academic practice and their application on the development of the personal academic style	6 C

Admission requirements: Language proficiency of English and/or German at least C1 CEFR	**Recommended previous knowledge:** first experiences in academic writing
Language: English, German	**Person responsible for module:** Irina Barczaitis Dr. Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 3
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.45: Academic Writing for Law Students in a Multilingual Context (MultiConText)**	3 C 1 WLH

Learning outcome, core skills:	**Workload:**
Nach Abschluss dieses Moduls kennen Studierende rechtwissenschaftlicher Fächer in international orientierten Studiengängen und Studierende rechtwissenschaftlicher Studiengänge, die in ihrem akademischen Schreiben und Handeln mehrsprachig vorgehen möchten die Arbeitsschritte beim Verfassen akademischer Textsorten (z.B. Seminararbeiten, Masterarbeiten). Sie können sich die eigene Mehrsprachigkeit für ihren Schreibprozess als Ressource bewusst machen und mit verschiedenen Strategien diese Ressource im Rahmen des eigenen akademischen Schreibens nutzen. Sie sind in der Lage • ihr Vorgehen beim Verfassen akademischer Textsorten (z.B. Seminararbeiten, Masterarbeiten) zu planen und zu reflektieren, • eine Fragestellung zu konkretisieren, • produktiv mit wissenschaftlicher Literatur in verschiedenen Sprachen umzugehen, • Gesamttexte und einzelne Kapitel zu strukturieren, • Rohtext unter Verwendung translingualer Strategien zu verfassen und zu überarbeiten und dabei ggfs. KI verantwortungsbewusst, kritisch und transparent zu nutzen.	Attendance time: 14 h Self-study time: 76 h

Course: Workshop: Schreiben in den Rechtswissenschaften im mehrsprachigen Kontext. Writing in Law Studies Across Languages (MultiContext) (Block course) *Course frequency:* irregular	1 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** regelmäßige Teilnahme; Schreibaufgaben (max. 15 Seiten), **Examination requirements:** Kompetenzen in rechtswissenschaftlich relevanten akademischen Textarten, reflektiertes Wissen über mehrsprachig gestaltete akademische Schreibprozesse.	3 C

Admission requirements: Deutschkenntnisse und/oder Englischkenntnisse mind. GER-Niveau C1	**Recommended previous knowledge:** -
Language: German	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:

Empfohlenes Fachsemester: Ab 3, Master/Magister ab 1

Empfohlen für Studierende, die in diesem oder dem kommenden Semester eine Themenarbeit schreiben werden

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.48: Academic Writing and Presentation in the Natural Sciences: German, English, Multilingual (for Undergraduate Students)**	6 C 2 WLH

Learning outcome, core skills: Nach Abschluss dieses Moduls verfügen die Teilnehmenden über Textsortenkompetenzen zu verschiedenen Textarten des wissenschaftlichen Kontexts der Publikation (z.B. wissenschaftliche Paper, Abstracts und Reviews). Sie können unterschiedliche Textarten, ggfs. unter kritischer und reflektierter Zuhilfenahme von KI, sowie akademische Teiltexte (z.B. Einleitung – Introduction, Results) selbst verfassen und aus Fachzeitschriften exzerpieren. Zudem können sie akademische Präsentationen effizient halten. Die erworbenen Kenntnisse während des Workshops befähigen die Studierenden, erfolgreich an Tagungen mit Präsentationen teilzunehmen und ein Manuskript dem jeweiligen Forschungskontext gemäß zu verfassen.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Workshop	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** regelmäßige Teilnahme; konzipierende Schreibaufgaben (max. 15 Seiten) **Examination requirements:** Kompetenzen in Bereichen naturwissenschaftlich relevanter Textarten, reflektiertes Wissen über akademische Schreibprozesse, der schriftlich konzipierten Mündlichkeit, der funktionalen Medienerstellung und –nutzung für einen akademischen Vortrag, Kompetenzen zur Reflexion akademischer Präsentationen.	6 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:
Dieses Modul wird für Studierende in international orientierten Studiengängen empfohlen.

This module is recommended to students in international study programs.

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.49: Academic writing and presentation in the natural sciences: German, English, Multilingual... (for graduate students)**	6 C 2 WLH

Learning outcome, core skills: Nach Abschluss dieses Moduls verfügen die Teilnehmenden über Textsortenkompetenzen zu verschiedenen Textarten des wissenschaftlichen Kontexts der Publikation (z.B. wissenschaftliche Paper, Abstracts und Reviews). Sie können unterschiedliche Textarten, ggfs. unter kritischer und reflektierter Zuhilfenahme von KI, sowie akademische Teiltexte (z.B. Einleitung – Introduction, Results) selbst verfassen und aus Fachzeitschriften exzerpieren. Zudem können sie akademische Präsentationen effizient halten. Die erworbenen Kenntnisse während des Workshops befähigen die Studierenden, erfolgreich an Tagungen mit Präsentationen teilzunehmen und ein Manuskript dem jeweiligen Forschungskontext gemäß zu verfassen.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Akademisches Schreiben und Präsentieren in den Naturwissenschaften: deutsch, englisch, mehrsprachig... (für Master-Studierende) (Block course) *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** regelmäßige Teilnahme; konzipierende Schreibaufgaben (max. 15 Seiten) **Examination requirements:** Kompetenzen in der Vorbereitung von naturwissenschaftlichen Publikationen, reflektiertes Wissen über akademische Schreibprozesse, der schriftlich konzipierten Mündlichkeit, der funktionalen Medienerstellung und –nutzung für einen akademischen Vortrag, Kompetenzen zur Reflexion akademischer Präsentationen.	6 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Melanie Brinkschulte
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:

Dieses Modul wird für Studierende in international orientierten Studiengängen empfohlen.

This module is recommended to students in international study programs.

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.62: Giving Academic Presentations**	6 C 2 WLH

Learning outcome, core skills: Nach Abschluss dieses Moduls kennen die Studierenden die (wissenschafts-)sprachlichen Anforderungen, die sie beim Halten erster Referate in einer universitären Lehrveranstaltung erfüllen müssen. Sie sind in der Lage, komplexe Informationen zielgruppenspezifisch aufzubereiten und können reflektiert geeignete Medien für ihren Vortrag auswählen. Sie haben grundlegende Kenntnisse schriftlich konzipierter Mündlichkeit und sind in der Lage, diese auf eigene Vorträge anzuwenden. Zudem kennen die Studierenden geeignete Formate, um im digitalen Raum Inhalte zu präsentieren. Sie können diese Formate kontextorientiert anpassen und zielgerichtet einsetzen.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Workshop: Mehrsprachig Referate und Präsentationen vorbereiten und halten / Preparing Presentations Across Languages - MultiConText (Block course) *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Konzipierende Schreibaufgaben (max. 15 Seiten); Referat (ca. 20 Minuten), regelmäßige Teilnahme **Examination requirements:** Kompetenzen in Bereichen der akademischen mündlichen Rhetorik, schriftlich konzipierten Mündlichkeit, der funktionalen Medienerstellung und –nutzung für einen akademischen Vortrag auch in digitalen Räumen, Kompetenzen zur Reflexion akademischer Präsentationen.	6 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** keine
Language: German, English	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.63: Autoethnographic Writing**	6 C 2 WLH

Learning outcome, core skills: Nach Abschluss dieses Moduls kennen die Studierenden die Eigenschaften der Textsorte “Autoethnographie” und ihre Abgrenzung zu Autoethnographie als Erhebungsmethode. Sie sind in der Lage, wissenschaftliche Diskursebenen begleitet von autobiographischen Daten und Erfahrungen zu analysieren und diese reflektiert zu verschriftlichen. Sie haben grundlegende Kenntnisse der Autoethnographie als Erhebungsmethode und setzen diese im eigenen Schreibprojekt um. Sie kennen außerdem Schritte der Vorbereitung einer Autoethnographie und die verschiedenen Formen autoethnographischen Schreibens.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Workshop: Autoethnographic Writing - MultiConText (Block course) *Course frequency:* irregular	2 WLH
Examination: Portfolio (max. 20 pages) **Examination prerequisites:** Konzipierende Schreibaufgaben (max. 15 Seiten); Referat (ca. 20 Minuten), regelmäßige Teilnahme **Examination requirements:** Kompetenzen in der akademischen schriftlichen Beschreibung einer Reflexion in Verbindung mit komplexen Sachverhalten einer wissenschaftlichen Untersuchung. Wissen über die Textsorte Autoethnographie.	6 C

Admission requirements: Deutsch und/oder Englisch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 4 - 6
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module SK.IKG-ISZ.65: Counterspeech Against Online Hatespeech – Standing Up for Others by Writing**	3 C 1 WLH

Learning outcome, core skills: Nach Abschluss des Moduls kennen die Studierenden zentrale Strategien des Counterspeech gegen Hasskommentare im Netz. Sie sind in der Lage, schriftliche Hasskommentare linguistisch zu analysieren und geeignete Strategien der Gegenrede auszuwählen und schreibend anzuwenden, um invektive (herabsetzende) Aussagen zu entkräften, hasserfüllte Threads zu beenden und/oder von Hass Betroffenen Solidarität zu signalisieren.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Workshop: Counterspeech gegen Online-Hatespeech – schreibend digitale Zivilcourage zeigen (Blockveranstaltung)	1 WLH
Examination: Portfolio/E-Portfolio (max. 20 pages) **Examination prerequisites:** Lese-Schreibaufgaben (max. 15 Seiten); regelmäßige Teilnahme **Examination requirements:** Kenntnisse in Analysekriterien für Hatespeech und Strategien des schriftlichen Counterspeech im Netz	3 C

Admission requirements: Deutsch auf GER-Niveau mind. C1	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Ella Grieshammer
Course frequency: unregelmäßig	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module SK.Phil-VML.1a: Visual and Media Literacy**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden erwerben Fähigkeiten in den *New Literacies* der visuellen Kompetenz und der Medienkompetenz. Sie lernen die Darstellungsmittel verschiedener Medien und ihrer Genres kennen und vergleichen und setzen sich kritisch-analytisch mit Medienformen und Medieninhalten auseinander. Sie erarbeiten sich Analysefähigkeiten verschiedener narrativer Bildmedien auf der Basis einschlägiger geistes-, kultur-, medien- und kommunikationswissenschaftlicher Theorien und Methoden.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Seminar	
Examination: Einzel- oder Gruppenreferat (max. 3 Personen) mit Diskussion (30 minutes), not graded **Examination prerequisites:** Regelmäßige aktive Teilnahme an der Lehrveranstaltung	3 C

Examination requirements: Die Studierenden zeigen, dass Sie ihre visuellen Kompetenzen und Medienkompetenzen kritisch vertieft haben. Sie weisen nach, dass sie sich analytisch mit spezifischen Medienformen und deren Inhalten auseinandersetzen und dafür relevante Methoden und Theorien auswählen und anwenden können.	

Admission requirements: keine	**Recommended previous knowledge:** Englischkenntnisse auf Niveau B2 des Gemeinsamen Europäischen Referenzrahmens
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations: Empfohlenes Fachsemster: Bachelor: 2-6; Master 1-4

Georg-August-Universität Göttingen **Module SK.Phil-VML.1b: Visual and Media Literacy**	5 C 2 WLH

Learning outcome, core skills: Die Studierenden erwerben Fähigkeiten in den *New Literacies* der visuellen Kompetenz und der Medienkompetenz. Sie lernen die Darstellungsmittel verschiedener Medien und ihrer Genres kennen und vergleichen und setzen sich kritisch-analytisch mit Medienformen und Medieninhalten auseinander. Sie erarbeiten sich Analysefähigkeiten verschiedener narrativer Bildmedien auf der Basis einschlägiger geistes-, kultur-, medien- und kommunikationswissenschaftlicher Theorien und Methoden.	**Workload:** Attendance time: 28 h Self-study time: 122 h

Course: Seminar	
Examination: Term Paper (max. 3500 words) **Examination prerequisites:** Einzel- oder Gruppenreferat (max. 3 Personen) mit Diskussion (ca. 30 Minuten) Regelmäßige aktive Teilnahme an der Lehrveranstaltung	5 C

Examination requirements: Die Studierenden zeigen, dass Sie ihre visuellen Kompetenzen und Medienkompetenzen kritisch vertieft haben. Sie weisen nach, dass sie sich analytisch mit spezifischen Medienformen und deren Inhalten auseinandersetzen und dafür relevante Methoden und Theorien auswählen und anwenden können.	

Admission requirements: keine	**Recommended previous knowledge:** Englischkenntnisse auf Niveau B2 des Gemeinsamen Europäischen Referenzrahmens
Language: English	**Person responsible for module:** Prof. Dr. Barbara Schaff
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations: Empfohlenes Fachsemester: Bachelor: 2-6; Master 1-4