

*This translation is provided solely as a courtesy to international students and applicants. Reliance in law may only be placed upon the official German version of these Regulations.*

<b>Georg-August-Universität Göttingen</b> <b>Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"</b> <b>Module P.Che.1601 "Latest developments in catalysis research"</b>						
<b>Learning objectives and skills</b> After successfully completing the module, the doctoral candidate <ul style="list-style-type: none"> <li>• should have in-depth knowledge of the current research topics of homogeneous and heterogeneous catalysis in technology and the laboratory;</li> <li>• must know modern methods of catalytic synthesis of functional macromolecular compounds;</li> <li>• should have knowledge of the applications of catalytic reactions in organic synthesis chemistry;</li> <li>• should have knowledge of selected developments in the area of enzymatic and bio-inspired catalysis;</li> <li>• should be able to accurately explain the current research trends in catalytic chemistry.</li> </ul>	<b>C/WLH total</b> 4 C/ 4 WLH  Workload: 120 h. thereof Attendance hours: 56 hrs Self-study 64 hrs					
<b>Partial modules: Courses and performance record</b>  1. Lecture "Latest developments in catalysis research" <table border="1" style="width: 100%;"> <tr><td>Series of lectures</td></tr> <tr><td>Performance record for 1.: Written examination (60 minutes)</td></tr> </table> 2. Partial module: Workshop "Highlights of catalysis research" <table border="1" style="width: 100%;"> <tr><td>Workshop</td></tr> <tr><td>Performance record for 2.: Written examination (60 minutes)</td></tr> <tr><td>Requirements for participation in the performance record: Proof of regular participation in the courses of the workshop "Highlights of catalysis research"</td></tr> </table>	Series of lectures	Performance record for 1.: Written examination (60 minutes)	Workshop	Performance record for 2.: Written examination (60 minutes)	Requirements for participation in the performance record: Proof of regular participation in the courses of the workshop "Highlights of catalysis research"	
Series of lectures						
Performance record for 1.: Written examination (60 minutes)						
Workshop						
Performance record for 2.: Written examination (60 minutes)						
Requirements for participation in the performance record: Proof of regular participation in the courses of the workshop "Highlights of catalysis research"						
<b>Options</b> Compulsory module	<b>Qualifications for entry</b> None					
<b>Reassessment</b> Twice	<b>Applicability</b> Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"					
<b>Frequency of course</b> <b>Semester basics</b> Yearly	<b>Duration</b> The module can be completed in two semesters					
<b>Language</b> English	<b>Maximum number of students</b> 30					
<b>Module coordinator</b> Prof. Dr. Sven Schneider						

**Georg-August-Universität, Göttingen****Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"****Module P.Che.1602 "Modern methods and practice in catalytic chemistry"****Learning objectives and skills**

After successfully completing the module, the doctoral candidate

- should have in-depth knowledge of the application of spectroscopic methods in catalysis research (part 1),
- should understand and be able to apply kinetic methods of mechanistic explanation of catalytic processes (part 2),
- should know modern high-throughput procedures and automated syntheses in the area of catalysis research (part 3),
- should be familiar with the use of computer methods in catalysis research (part 4), and
- should have gained sound insights in the application of selected catalytic procedures and processes in industrial practice (part 5).

**Integrative teaching of key competencies in part 5:** The doctoral candidate has learnt about the areas of activity of catalysis chemists in the real work-environment.

**C/WLH total**

4 C / 5 WLH

*thereof*

Share of key competencies:  
1 C / 2 WLH

Workload: 120 h.  
thereof  
Attendance hours: 70 hrs  
Self-study 50 hrs

**Courses and performance record**

Three of the parts 1 to 4 and part 5 have to be completed.

**Part 1: "Spectroscopic methods in catalysis research"**

Lecture or block course

Performance record for part 1: Written examination (60 minutes) or oral examination (approx. 30 min.)

Requirement for participation in the performance record (in case of block course): Proof of regular participation

**Part 2: "Kinetic methods of mechanistic explanation"**

Lecture or block course

Performance record for part 2: Written examination (60 minutes) or oral examination (approx. 30 min.)

Requirement for participation in the performance record (in case of block course): Proof of regular participation

**Part 3: "High-throughput procedures and automated syntheses"**

Lecture or block course

Performance record for part 3: Written examination (60 minutes) or oral examination (approx. 30 min.)

Requirement for participation in the performance record (in case of block course): Proof of regular participation

**Part 4: "Computer methods in catalysis research"**

Lecture or block course

Performance record for part 4: Written examination (60 minutes) or oral examination (approx. 30 min.)

Requirement for participation in the performance record (in case of block course): Proof of regular participation

5. Partial module: "Practical catalytic chemistry"		
Industry field trips		
Performance record for part 4: Proof of participation in two industry field trips		
<b>Options</b> Compulsory module	<b>Qualifications for entry</b> None	
<b>Reassessment</b> Twice	<b>Applicability</b> Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"	
<b>Frequency of course</b> <b>Semester basics</b> One of the parts 1- 4 in rotation every semester; an industry field trip (part 5) will be offered annually	<b>Duration</b> The module can be completed in three semesters.	
<b>Language</b> English	<b>Maximum number of students</b> 30	
<b>Module coordinator</b> Prof. Dr. Lutz Ackermann		

**Georg-August-Universität, Göttingen**  
**Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"**  
**Module P.Che.1603 "Catalysis in the chemical context"**

<p><b>Learning objectives and skills</b></p> <p>After successfully completing the module, the doctoral candidate should have knowledge about the current research projects in the national and international field and should be aware of the status and the results of the doctoral theses in catalysis-related research areas of inorganic, organic, physical, macromolecular or technical chemistry.</p> <p><b>Integrative teaching of key competencies:</b> The doctoral candidate can present his/her own scientific results intelligibly and discuss them critically in a circle of specialists.</p>	<p><b>C/WLH total</b></p> <p>6 C / 6 WLH</p> <p><i>thereof</i>  Share of key competencies:  1.5 C / 1.5 WLH</p> <p>Workload: 120 hrs  thereof  Attendance hours: 56 hrs  Self-study 64 hrs</p>			
<p><b>Courses and performance record</b></p> <table border="1" data-bbox="191 855 1109 1097"> <tr> <td data-bbox="191 855 1109 896">Seminar</td> </tr> <tr> <td data-bbox="191 896 1109 974">Performance record: three presentations or reports (about 30 min. plus academic discussion)</td> </tr> <tr> <td data-bbox="191 974 1109 1097">Requirements for participation in the performance record: prior to the third presentation or the third report, a proof of participation in 30 GDCh lectures or comparable events with guest lecturers (institute colloquia among others) has to be provided</td> </tr> </table>	Seminar	Performance record: three presentations or reports (about 30 min. plus academic discussion)	Requirements for participation in the performance record: prior to the third presentation or the third report, a proof of participation in 30 GDCh lectures or comparable events with guest lecturers (institute colloquia among others) has to be provided	
Seminar				
Performance record: three presentations or reports (about 30 min. plus academic discussion)				
Requirements for participation in the performance record: prior to the third presentation or the third report, a proof of participation in 30 GDCh lectures or comparable events with guest lecturers (institute colloquia among others) has to be provided				
<p><b>Options</b>  Compulsory module</p>	<p><b>Qualifications for entry</b>  None</p>			
<p><b>Reassessment</b>  Twice</p>	<p><b>Applicability</b>  Doctoral studies  "Catalysis for Sustainable Synthesis (CaSuS)"</p>			
<p><b>Frequency of course</b>  <b>Semester basics</b>  Every semester; courses are offered in all participating working groups</p>	<p><b>Duration</b>  The module can be completed in three semesters.</p>			
<p><b>Language</b>  English</p>	<p><b>Maximum number of students</b>  30</p>			
<p><b>Module coordinator</b>  Prof. Dr. Lutz Ackermann</p>				

**Georg-August-Universität, Göttingen**  
**Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"**  
**Module P.Che.1604 "Presentation and discussion of research results"**

<p><b>Learning objectives and skills</b></p> <p>After successfully completing the module, the doctoral candidate should have in-depth knowledge of the current problems in modern catalytic chemistry in the international field.</p> <p><b>Integrative teaching of key competencies:</b> The doctoral candidate should be in a position to present his/her own research work in the form of a specialist lecture or a poster to an international audience and support it professionally (criteria: Language and clarity of presentation, use of media, establishing a link between the technical content and an interdisciplinary problem, discussion). The doctoral candidate should also be in a position to contribute actively in organising a specialist symposium or a summer school.</p>	<p><b>C/WLH total</b></p> <p>5 C / 8 WLH</p> <p>thereof Share of key competencies: 2.5 C / 5 WLH</p> <p>Workload: 150 hrs thereof Attendance hours: 104 hrs Self-study 46 hrs</p>						
<p><b>Courses and performance record</b></p> <p>Part 1: "Catalysis for Sustainable Synthesis (CaSuS) - seminar"</p> <table border="1" data-bbox="193 824 1109 898"> <tr><td>Seminar or summer school</td></tr> <tr><td>Performance record for 1: academic lecture or poster presentation</td></tr> </table> <p>Part 2: "Catalysis Symposium of Lower Saxony (NiKaS)"</p> <table border="1" data-bbox="193 954 1109 1028"> <tr><td>Symposium</td></tr> <tr><td>Performance record for 2: academic lecture or poster presentation</td></tr> </table> <p>Part 3: "Conference"</p> <table border="1" data-bbox="193 1084 1109 1158"> <tr><td>Participation in a conference</td></tr> <tr><td>Performance record for 2: academic lecture or poster presentation</td></tr> </table>	Seminar or summer school	Performance record for 1: academic lecture or poster presentation	Symposium	Performance record for 2: academic lecture or poster presentation	Participation in a conference	Performance record for 2: academic lecture or poster presentation	
Seminar or summer school							
Performance record for 1: academic lecture or poster presentation							
Symposium							
Performance record for 2: academic lecture or poster presentation							
Participation in a conference							
Performance record for 2: academic lecture or poster presentation							
<p><b>Options</b></p> <p>Compulsory module in the doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"</p>	<p><b>Qualifications for entry</b></p> <p>None</p>						
<p><b>Reassessment</b></p> <p>Twice</p>	<p><b>Applicability</b></p> <p>Doctoral study programme "Catalysis for Sustainable Synthesis (CaSuS)"</p>						
<p><b>Frequency of course</b></p> <p><b>Semester basics</b></p> <p>Parts 1 and 2: annually (alternate) Part 3: every semester</p>	<p><b>Duration</b></p> <p>The module can be completed in two semesters</p>						
<p><b>Language</b></p> <p>English</p>	<p><b>Maximum number of students</b></p> <p>30</p>						
<p><b>Module coordinator</b></p> <p>Prof. Dr. Franc Meyer</p>							