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Modulverzeichnis für den Promotionsstudiengang „Mathematical Sciences“ zur Promotionsordnung der mathematisch-naturwissenschaftlichen Promotionsschule der Georg-August-Universität Göttingen - Georg-August University School of Science (GAUSS) - (RerNatO)	16063
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Herausgegeben von der Präsidentin der Georg-August-Universität Göttingen

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Fakultätsübergreifende Ordnungen:

Nach Beschluss des Fakultätsrats der Fakultät für Mathematik und Informatik vom 03.02.2017 sowie nach Stellungnahme des Senats vom 13.09.2017 hat das Präsidium der Georg-August-Universität Göttingen am 24.10.2017 die Neufassung des Modulverzeichnis für den Promotionsstudiengang „Mathematical Sciences“ zur Promotionsordnung der mathematisch-naturwissenschaftlichen Promotionsschule der Georg-August-Universität Göttingen - Georg-August University School of Science (GAUSS) - (RerNatO) genehmigt (§ 44 Abs. 1 Satz 2 NHG, § 41 Abs. 2 Satz 2 NHG §§ 37 Abs. 1 Satz 3 Nr. 5 b), 44 Abs. 1 Satz 3 NHG).

Directory of Modules

**Doctoral Degree Programme
[Promotionsstudiengang] "Mathematical
Sciences" - referring to: Promotionsordnung
der mathematisch-naturwissenschaftlichen
Promotionsschule der Georg-August-Universität
Göttingen - Georg-August University
School of Science (GAUSS) - (RerNatO) (Amtliche
Mitteilungen I 21/2012 p. 1176, last revised
through Amtliche Mitteilungen I 54/2017 p. 1456)**

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Georg-August-Universität Göttingen		3 C 2 WLH
Module P.Mat.7101: Scientific colloquia and seminars		
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • scientific collaboration in a field of research; • workup of scientific presentations attended at a mathematical symposium. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • discuss current research within the frame of scientific, research oriented meetings or courses; • present research results in mathematics to an academic audience. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Seminar		2 WLH
Course assessment: Presentation (appr. 60 minutes) with discussion		
Requirements: Presentation of complex mathematical topics in current research.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • seminars (M.Mat.48**); • 'Oberseminare' (M.Mat.49**); • symposia, colloquia, block courses etc. 		

Georg-August-Universität Göttingen Module P.Mat.7102: Research activities at scientific colloquia and seminars	3 C 2 WLH
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • workup of own research results for the purpose of a presentation in a seminar or at a symposium. • participation in symposia on mathematical research featuring external audiences; • rework scientific presentations attended at a mathematical symposium. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • discuss current research within the frame of scientific, research oriented meetings or courses; • present own research results in mathematics to external audiences. 	Workload: Attendance time: 28 h Self-study time: 62 h
Course: Symposia	2 WLH
Course assessment: Presentation (appr. 30 minutes) with discussion	
Requirements: Presentation of own research results.	
Admission requirements: n/a	Recommended previous knowledge: n/a
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)
Course frequency: each semester	Duration:
Number of repeat examinations permitted: twice	Recommended semester:
Maximum number of students: not limited	
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • Symposia, colloquia, block courses etc. with external audiences; • alternatively, seminars (M.Mat.48**) or 'Oberseminare' (M.Mat.49**). 	

Georg-August-Universität Göttingen		6 C 4 WLH
Module P.Mat.7201: Advanced studies in a field of research I		
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • deepening of knowledge in their field of specialisation; • knowledge of methodical and thematic structure of their field of research. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • apply methods and techniques typical in their field of reasearch; • solve problems in their field of research; • develop strategies for solving problems typical in the field of research and present the solutions found. 		Workload: Attendance time: 56 h Self-study time: 124 h
Course: Seminar or lecture course		2 WLH
Course assessment: Oral examination (appr. 20 minutes) or presentation (appr. 75 minutes)		
Requirements: Proof of advanced knowledge in the area of the doctoral project.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • seminars (M.Mat.48**); • 'Oberseminare' (M.Mat.49**); • lecture course with exercises where applicable: <ul style="list-style-type: none"> ◦ M.Mat.**** ◦ "Introduction to ..." ("Einführung in ...") 		

- "Advances in ..." ("Vertiefung in ...")
- summer schools, winter schools and comparable block courses.

Georg-August-Universität Göttingen		3 C 2 WLH
Module P.Mat.7202: Advanced studies in a field of research II		
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • deepening of knowledge in their field of specialisation; • knowledge of methodical and thematic structure of their field of research. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • apply methods and techniques typical in their field of reasearch; • solve problems in their field of research; • develop strategies for solving problems typical in the field of research and present the solutions found. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Seminar or lecture course		2 WLH
Course assessment: Oral examination (appr. 20 minutes) or presentation (appr. 75 minutes)		
Requirements: Proof of advanced knowledge in the area of the doctoral project.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • seminars (M.Mat.48**); • 'Oberseminare' (M.Mat.49**); • lecture course with exercises where applicable: <ul style="list-style-type: none"> ◦ M.Mat.**** ◦ "Introduction to ..." ("Einführung in ...") 		

- "Advances in ..." ("Vertiefung in ...")
- summer schools, winter schools and comparable block courses.

Georg-August-Universität Göttingen		3 C
Module P.Mat.7203: Complementary studies		4 WLH
<p>Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on:</p> <ul style="list-style-type: none"> • expansion of knowledge in their field of specialisation; • advanced knowledge of methodical and thematic structure of their field of research; <p>alternatively,</p> <ul style="list-style-type: none"> • supervised designing of a course (lecture course, seminar or exercise class); • supervision of students in seminars, exercise classes etc. as well as of thesis work and projects. <p>Core skills: After having successfully completed the module students will be able to</p> <ul style="list-style-type: none"> • apply a rich repertoire of methods in their field of specialisation; • consider results of their field of research in a larger context; <p>alternatively,</p> <ul style="list-style-type: none"> • critically reflect the own teaching; • expand their reflection of the scientific background. 		<p>Workload: Attendance time: 56 h Self-study time: 34 h</p>
Course: Seminar or lecture course		2 WLH
Course assessment: Oral examination (appr. 20 minutes) or presentation (appr. 75 minutes)		
Requirements: Proof of complementary knowledge in the field of specialisation.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		

Additional notes and regulations:

Permitted are:

- seminars (M.Mat.48**);
- 'Oberseminare' (M.Mat.49**);
- lecture course with exercises where applicable:
 - M.Mat.****
 - "Introduction to ..." ("Einführung in ...")
 - "Advances in ..." ("Vertiefung in ...")
- summer schools, winter schools and comparable block courses.

alternatively,

- supervision of students in seminars, exercise classes etc. as well as of thesis work and projects.

Georg-August-Universität Göttingen		3 C
Module P.Mat.7301: Accompanying seminar: Introduction to reseach		2 WLH
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • overview on literature relevant in their field of specialisation. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • apply a rich repertoire of methods in their field of specialisation; • independent study on recent research results on the basis of recent research literature. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Seminar		2 WLH
Course assessment: Presentation (appr. 75 minutes)		
Requirements: Proof of overview on literature relevant in a field of research.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • seminars (M.Mat.48**); • 'Oberseminare' (M.Mat.49**); • summer schools, winter schools and comparable block courses. 		

Georg-August-Universität Göttingen		3 C 2 WLH
Module P.Mat.7302: Accompanying seminar: Scientific analysis of research questions		
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> • overview on methods relevant to solving problems in mathematical research. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> • independently formulate mathematical problems; • describe appropriate solution strategies; • communicate solution ideas and obstacles. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Seminar		2 WLH
Course assessment: Presentation (appr. 75 minutes)		
Requirements: Proof of overview on methods relevant in a field of research.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> • seminars (M.Mat.48**); • 'Oberseminare' (M.Mat.49**); • summer schools, winter schools and comparable block courses. 		

Georg-August-Universität Göttingen Module P.Mat.7303: Accompanying seminar: Documentation of mathematical issues		3 C 2 WLH
Learning outcome, core skills: Learning outcomes: In this module students learn methods, concepts, theories and applications in mathematical research with particular focus on: <ul style="list-style-type: none"> development of a personalised style of scientific writing following the guidelines of good scientific practice and the recognised standards in mathematics. Core skills: After having successfully completed the module students will be able to <ul style="list-style-type: none"> independently formulate mathematical problems; describe appropriate solution strategies; communicate solution ideas and obstacles; master the established rules of good scientific practice. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Seminar		2 WLH
Course assessment: Presentation (appr. 75 minutes)		
Requirements: Ability of documentation of mathematical issues.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: Permitted are: <ul style="list-style-type: none"> seminars (M.Mat.48**); 'Oberseminare' (M.Mat.49**); summer schools, winter schools and comparable block courses. 		

Georg-August-Universität Göttingen		3 C 2 WLH
Module P.Mat.7901: Key competencies in university teaching		
Learning outcome, core skills: Learning outcomes: Successful completion of this module enables students to acquire skill in university teaching. This includes: <ul style="list-style-type: none"> • ability to communicate mathematical content to students in the first year of their undergraduate studies; • ability to deal with heterogeneous exercise classes; • use of appropriate teaching methods and visualization techniques; • confident appearance. Core skills: After having successfully completed the module students will have acquired: <ul style="list-style-type: none"> • rhetoric and presentation skills; • team competence including constructive way of dealing with conflicts and capability to motivate; • time management skills; • intercultural communication skills, where applicable. 		Workload: Attendance time: 28 h Self-study time: 62 h
Course: Exercise class		2 WLH
Course assessment: Giving a lesson in an exercise classe (appr. 90 minutes)		
Requirements: Ability to apply basic key competencies in university teaching.		
Admission requirements: n/a	Recommended previous knowledge: n/a	
Language: English, German	Person responsible for module: Programme coordinator (Dean of Studies Mathematics)	
Course frequency: each semester	Duration:	
Number of repeat examinations permitted: twice	Recommended semester:	
Maximum number of students: not limited		
Additional notes and regulations: This module can be replaced by any other key competency module offered by the teaching unit mathematics or by any cross-faculty key competency module. Alternatively, supervision of students in exercise classes can be acknowledged.		