

Annex SFB

Studienfachbeschreibung (subject description, SFB) for the subject Mathematical Physics as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Responsible: Faculty of Mathematics and Computer Science

Responsible: Faculty of Physics and Astronomy

Abbreviations used: Course types: $\mathbf{E} = \text{field trip}$, $\mathbf{K} = \text{colloquium}$, $\mathbf{O} = \text{conversatorium}$, $\mathbf{P} = \text{placement/lab course}$, $\mathbf{R} = \text{project}$, $\mathbf{S} = \text{seminar}$, $\mathbf{T} = \text{tutorial}$, $\mathbf{U} = \text{exercise}$, $\mathbf{V} = \mathbf{V} = \mathbf$

= lecture

Term: **SS** = summer semester. **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: (L)ASPO = general academic and examination regulations (for teaching-degree programmes), FSB = subject-specific provisions, SFB

= list of modules

Other: A = thesis, LV = course(s), PL = assessment(s), TN = participants, VL = prerequisite(s)

Conventions for the

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not cre-

modules in this SFB: ditable for bonus.

Information on Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the meassessment procedures: thod of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the

customary manner.

Should a module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all

individual assessments.

Examination regulations version: 2016

Examination regulations version: 2016

In accordance with the general regulations governing the degree subject described in this module catalogue:

ASP02015

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

04-Apr-2016 (2016-52)

12-Jun-2024 (2024-77)

14-Nov-2024 (2024-98)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

Every module will be described using the following form:

Abbreviation	Module title											
	ECTS		Duration	n (in semesters) Method of grading Module level								
	Courses		To be	o be specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y								
	Method of as	ssessme	ent									
	Only after su completion o		l if appl	if applicable								
	Other prereq	uisites	if appl	icable								
	Participants and allocation of places		ocati- if appl	if applicable								
	Additional in	formati	on if appl	icable								
	Referred to in	n LPO I	if appl	icable (examination r	egulations for teachin	g-degree programmes)						

Compulsory Cours	es (20 E	CTS cre	dits)									
10-M=MP1-161-	Analys	is and	Geometry	of Clas	ssical Systems							
mo1	ECTS	10	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	Courses			V (4) + Ü (2) Module taught in: German and/or English							
				b) ora c) ora Langu	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English creditable for bonus							
10-M=MP2-161-	Algebr	a and D	ynamics o	mics of Quantum Systems								
mo1	ECTS	10	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	es			V (4) + Ü (2) Module taught in: German and/or English							
	Metho	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English creditable for bonus							
Compulsory Electi	ves (50 E	ECTS cre	edits)									
Subfield Mathema	tics (8 E	CTS cre	dits)									
10-M=AAAN-161-	Applie	d Analy	sis									
mo1	ECTS	10	Duration	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	es			+ Ü (2) ıle taught in: Gern	nan and/or English						
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								

10-M=AAL-	Topics	Topics in Algebra												
G-161-mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	!S			+ Ü (2) le taught in: Germa	nn and/or English								
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=ADG-	Differe	ntial Ge	ometry											
M-161-m01	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	!S			+ Ü (2) le taught in: Germa	nn and/or English								
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=AFT-	Complex Analysis													
H-161-m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses			V (4) + Ü (2) Module taught in: German and/or English										
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus										
10-M=AGMS-161-		tric Str	uctures											
m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course				V (4) + Ü (2) Module taught in: German and/or English									
	Method	d of ass	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus										

10-M=AIST-161-	Industr	Industrial Statistics 1												
mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	S		V (4) + Modu	+ Ü (2) le taught in: Germa	n and/or English								
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=ALTH-161-	Lie The	ory												
mo1	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	S		V (4) + Modu	+ Ü (2) le taught in: Germa	n and/or English								
				b) ora c) ora Langu Asses credit	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=ANG-	Numeri	Numeric of Large Systems of Equations												
G-161-m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses			V (4) + Ü (2) Module taught in: German and/or English										
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus										
10-M=AOP-	Basics	in Optii	mization											
T-161-m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	S		V (4) + Modu	+ Ü (2) le taught in: Germa	n and/or English								
	Method	d of ass	essment	b) ora c) ora Langu Asses	en examination (approx. 90 to 120 minutes, usually chosen) or examination of one candidate each (approx. 20 minutes) or examination in groups (groups of 2, 15 minutes per candidate) ige of assessment: German or English ment offered: In the semester in which the course is offered and in the subsequent semester ble for bonus									

10-M=ARTH-161-	Control Theory												
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S	•	V (4) -									
		·			le taught in: German								
	Method	d of asse	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or									
				c) ora	c) oral examination of one candidate each (approx. 20 minutes) of c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
				Langu									
10-M=ASM-	Stocha	stic Mo	dels of Ri		nagement								
R-161-m01		10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			V (4) -		,							
					le taught in: German								
	Method	d of asse	essment	a) wri	tten examination (ap	oprox. 90 to 120 minı e candidate each (ap	utes, usually chosen) or						
							ninutes per candidate)						
				Langu	Language of assessment: German or English								
					Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=AST-	Stocha	stical P	rocesses	credit	able for bollus			<u>, </u>					
P-161-mo1	ECTS	10	Duration	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course		1	V (4) + Ü (2)									
				Module taught in: German and/or English									
	Method	d of asse	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or									
				b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)									
				Langu	age of assessment:	German or English							
					Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=A-	Topolo	σ\/		credit	able for bollus								
TOP-161-mo1		10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course			V (4) -	+ Ü (2)	, 0 0	<u> </u>		10				
					Module taught in: German and/or English								
	Method	d of asse	essment	a) wri	tten examination (a _l	oprox. 90 to 120 minu	utes, usually chosen) or						
				b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)									
				Language of assessment: German or English									
				Assessment offered: In the semester in which the course is offered and in the subsequent semester									
				credit	creditable for bonus								

10-M=AZ-	Time Series Analysis 1												
RA-161-mo1	ECTS	10	Duration	า	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	!S			+ Ü (2) ıle taught in: Germ	an and/or English							
	Method	d of ass	essment	b) ora c) ora Langu Asses	 a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus 								
10-M=AZTH-161-	Numbe	r Theor	у				'						
mo1	ECTS	10	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	·S			+ Ü (2) ıle taught in: Germ	an and/or English							
	Method	d of ass	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=AGP-	Giovan	Giovanni Prodi Lecture (Master)											
Cin-152-m01	ECTS	5	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	·S			V (3) + Ü (1) Module taught in: English								
	Method of assessment			a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=VA-		ed Topio	s in Analy	/sis									
NA-161-m01	ECTS	10	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	S			+ Ü (2) ıle taught in: Germ	an and/or English							
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								

10-M=VAT-	Algebra	Algebraic Topology												
P-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	S			V (4) + Ü (2) Module taught in: German and/or English									
	Method	l of asse	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=VGDS-161-		and the	eir Repre	sentati	ons									
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	S		V (4) - Modu	+ Ü (2) le taught in: Germaı	n and/or English								
	Method	l of asse	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=V-	Geometrical Mechanics													
GEM-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses			V (4) + Ü (2) Module taught in: German and/or English										
	Method	l of asse	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus										
10-M=VIST-161-	Industr	ial Stat	istics 2											
mo1	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	S		V (4) - Modu	+ Ü (2) le taught in: Germaı	n and/or English								
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus										

10-M=V-	Field Arithmetics												
KAR-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		V (4) - Modu	+ Ü (2) le taught in: Germa	n and/or English							
	Method	d of ass	essment	b) ora c) ora Langu Asses) written examination (approx. 90 to 120 minutes, usually chosen) or) oral examination of one candidate each (approx. 20 minutes) or) oral examination in groups (groups of 2, 15 minutes per candidate) anguage of assessment: German or English .ssessment offered: In the semester in which the course is offered and in the subsequent semester reditable for bonus								
10-M=VN-	Numeri	ic of Pai	tial Diffe	rential	Equations								
PE-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		V (4) - Modu	+ Ü (2) le taught in: Germa	n and/or English							
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VOP-	Selected Topics in Optimization												
T-161-m01	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		V (4) + Ü (2) Module taught in: German and/or English									
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=V-	Statist	ical Ana	lysis										
STA-161-m01	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		V (4) - Modu	+ Ü (2) le taught in: Germa	n and/or English							
	Method of assessment			b) ora c) ora Langu Asses	l examination of on l examination in gro lage of assessment:	e candidate each (ap oups (groups of 2, 15 r German or English	ninutes per candidate)		emester				

10-M=VZ-	Time Ser	ries An	alysis 2										
RA-161-m01	ECTS 1	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses				V (4) + Ü (2) Module taught in: German and/or English								
	Method	of asse	ssment	b) ora c) ora Langu Asses	o written examination (approx. 90 to 120 minutes, usually chosen) or								
10-M=V-	Discrete	Mathe	matics					'					
DIM-161-m01	ECTS 5	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			V (3) +	- Ü (1) le taught in: Germaı	n and/or English							
	Method	of asse	ssment	b) ora c) ora Langu Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VD-	Dynamical Systems												
SY-161-mo1	ECTS 5 Duratio			1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			V (3) + Ü (1) Module taught in: German and/or English									
	Method	of asse	ssment	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=V-	Aspects	of Geo	metry					'					
GEO-161-m01	ECTS 5	5	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses				V (3) + Ü (1) Module taught in: German and/or English								
	Method	of asse	essment	b) ora c) ora Langu Asses	en examination (approx. 60 to 90 minutes, usually chosen) or examination of one candidate each (approx. 15 minutes) or examination in groups (groups of 2, approx. 10 minutes per candidate) ge of assessment: German or English ment offered: In the semester in which the course is offered and in the subsequent semester ble for bonus								

10-M=V-	Mathematical Continuum Mechanics												
KOM-161-mo1	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	es		V (3) + Ü (1) Module taught in: G	erman and/or English								
	Metho	d of ass		b) oral examination c) oral examination Language of assess) written examination (approx. 60 to 90 minutes, usually chosen) or) oral examination of one candidate each (approx. 15 minutes) or) oral examination in groups (groups of 2, approx. 10 minutes per candidate) anguage of assessment: German or English ssessment offered: In the semester in which the course is offered and in the subsequent semester reditable for bonus								
10-M=VMB-	Mathe	matical	Imaging										
V-161-mo1	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	es		V (3) + Ü (1) Module taught in: G	erman and/or English								
	Metho	d of ass		a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=VMPH-161-	Selected Topics in Mathematical Physics												
mo1	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	es		V (4) + Ü (2) Module taught in: German and/or English									
	Metho	d of ass		a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=V-	Select	ed Topic	s in Contr	ol Theory									
TRT-161-m01	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	es		V (4) + Ü (2) Module taught in: G	erman and/or English								
	Metho	d of ass		b) oral examination c) oral examination Language of assess	written examination (approx. 90 to 120 minutes, usually chosen) or oral examination of one candidate each (approx. 20 minutes) or oral examination in groups (groups of 2, 15 minutes per candidate) nguage of assessment: German or English sessment offered: In the semester in which the course is offered and in the subsequent semester editable for bonus								

10-M=VI-	Inverse Problems												
PR-161-mo1	ECTS	5	Duration	า	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es		V (3) -	+ Ü (1) lle taught in: Germ	an and/or English							
	Metho	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VMT-	Modul	e Theor	y										
H-161-m01	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es		V (3) -	+ Ü (1) lle taught in: Germa	an and/or English							
	Metho	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=V-	Non-lir	Non-linear Analysis											
NAN-161-m01	ECTS	5	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es	`	V (3) + Ü (1) Module taught in: German and/or English									
	Metho	d of ass	essment	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
10-M=VOST-161-	Optima	al Contr	ol					,					
mo1	ECTS	5	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es		V (3) - Modu	+ Ü (1) lle taught in: Germa	an and/or English							
	Metho	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								

10-M=VV-	Netwo	Networked Systems											
SY-161-mo1	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es.			V (3) + Ü (1) Module taught in: German and/or English								
	Metho	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VK-	Compl	ex Geor	netry										
GE-161-m01	ECTS	10	Duration	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	25			+ Ü (2) ıle taught in: Germa	an and/or English							
				b) ora c) ora Langu Asses credit	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VPD-		Partial Differential Equations of Mathematical Physics											
P-161-m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	! S			V (4) + Ü (2) Module taught in: German and/or English								
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus					emester				
10-M=V-	Pseudo	o Riema	nnian and	Riem	annian Geometry								
PRG-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	25			+ Ü (2) Ile taught in: Germa	an and/or English							
	Metho	d of ass	essment	b) ora c) ora Langu Asses	al examination of or l examination in gr uage of assessmen	nination (approx. 90 to 120 minutes, usually chosen) or ation of one candidate each (approx. 20 minutes) or ation in groups (groups of 2, 15 minutes per candidate) assessment: German or English fered: In the semester in which the course is offered and in the subsequent semester conus							

10-M=AF-	Functional Analysis											
AN-161-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	S			V (4) + Ü (2) Module taught in: German and/or English							
	Method	l of asse	essment	b) ora c) ora Langu Asses	written examination (approx. 90 to 120 minutes, usually chosen) or oral examination of one candidate each (approx. 20 minutes) or oral examination in groups (groups of 2, 15 minutes per candidate) anguage of assessment: German or English assessment offered: In the semester in which the course is offered and in the subsequent semester reditable for bonus							
10-M=VAD-	Applied	l Differe	ntial Geo	metry								
G-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	5			+ Ü (2) lle taught in: Germa	n and/or English		<u> </u>				
	Method	l of asse	essment	b) ora c) ora Langu Asses	written examination (approx. 90 to 120 minutes, usually chosen) or							
10-M=VG-	Giovanni Prodi Lecture Selected Topics (Master)											
PSin-152-m01	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			V (4) + Ü (2) Module taught in: English								
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Language of assessment: English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M=VG-	Giovani	ni Prodi	Lecture A	Advanc	ed Topics (Master)							
PAin-152-mo1	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ Ü (2) lle taught in: English	l						
	Method of assessment			b) ora c) ora Langu Asses	Il examination of on I examination in gro Jage of assessment:	e candidate each (ap ups (groups of 2, 15 English	minutes per candidate		emester			

10-	Giovan	ni Prodi	Lecture	Moderi	n Topics (Master)							
M=VGPMin-152-	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
m01	Course	S			V (4) + Ü (2) Module taught in: English							
	Method	d of ass	essment	b) ora c) ora Langu Asses	a) written examination (approx. 90 to 120 minutes, usually chosen) or a point of one candidate each (approx. 20 minutes) or and examination of one candidate each (approx. 20 minutes) or and examination in groups (groups of 2, 15 minutes per candidate) anguage of assessment: English assessment offered: In the semester in which the course is offered and in the subsequent semester reditable for bonus							
10-M=SAL-	Semina	r in Alg	ebra	•								
G-161-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	_	S (2) Modu	le taught in: Germar	n and/or English						
	Method	d of ass	essment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=SD-	Seminar in Dynamical Systems and Control											
SC-161-m01	ECTS 5 Duratio			n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (2) Modu	le taught in: Germar	n and/or English						
	Method	d of ass	essment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=S-	Semina	r in Cor	mplex An	alysis								
COA-161-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		S (2) Modu								
	Method	d of ass	essment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=SAD-	Semina	r in App	plied Diffe	erentia	l Geometry	'		'	,			
G-161-mo1	ECTS 5 Duratio		n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			S (2) Modu								
	Method	d of ass	essment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								

10-M=S-	Semina	r in Ge	ometry ar	d Topo	ology	,						
GTO-161-m01	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	S		S (2) Modu	lle taught in: Germa	n and/or English						
	Method	l of ass	essment		talk (60 to 120 minutes)							
					Language of assessment: German or English							
10-M=SGP-	Ciovan	ni Drod	i Seminar		Assessment offered: In the semester in which the course is offered and in the subsequent semester							
Cin-152-mo1			Duratio		1 semester	Method of grading	numarical grada	Modul level	graduate			
	Courses	5	Duratio	S (2)	1 Semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				S (2) Module taught in: English							
	Method of assessment			Langi	calk (60 to 120 minutes) Language of assessment: English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=SID-	Interdis	sciplina	ry Semin		'		,	,				
C-161-m01	ECTS 5 Duratio			<u> </u>	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (2) Modu	lle taught in: Germa	n and/or English						
	Method of assessment			Langi	uage of assessment:		the course is offered a	and in the subsequent se	emester			
10-M=SM-	Seminar Mathematics in the Sciences											
SC-161-mo1	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (2) Module taught in: German and/or English								
	Method	l of ass	essment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
10-M=SN-	Semina	r in Nu	merical <i>N</i>	athem	atics and Applied A	nalysis		,				
MA-161-mo1	ECTS	5	Duratio					graduate				
	Courses	S		S (2) Module taught in: German and/or English								
	Method of assessment			talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								

10-M=SOP-	Seminar ii	n Optimizatio	n								
T-161-m01	ECTS 5	Duratio	n	1 semester	Method of grading n	umerical grade	Modul level	graduate			
	Courses		S (2) Modu	(2) Nodule taught in: German and/or English							
	Method of	assessment	Langi	alk (60 to 120 minutes) anguage of assessment: German or English ssessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=S-	Seminar iı	n Statistics									
STA-161-m01	ECTS 5	Duratio	n	1 semester	Method of grading n	umerical grade	Modul level	graduate			
	Courses	,	S (2) Modu	S (2) Module taught in: German and/or English							
	Method of	assessment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=SN-	Seminar ii	Seminar in Non-linear Analysis									
LA-161-m01	ECTS 5	Duratio	n	1 semester	Method of grading n	umerical grade	Modul level	graduate			
	Courses		S (2) Module taught in: German and/or English								
	Method of	assessment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
10-M=EL-	Learning b	y Teaching 1	•	· · ·							
T1-161-m01	ECTS 5	Duratio	n	1 semester	Method of grading n	umerical grade	Modul level	graduate			
	Courses		T (o)								
	Method of	assessment	Asses	ssment of tutoring	activities by supervising	lecturers or exercise	supervisors (1 to 2 teac	hing units)			

Subfield Physics (8	B ECTS credits)											
Module Group Gen	eral Theory of P	hysics										
11-QM2-161-m01	Quantum Mec	hanics II										
	ECTS 8	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses		V (4) + R (2) Module taught in: German or English									
			a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-TQO-221-m01	Theoretical Quantum Optics											
	ECTS 8 Duratio			1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses		V (4) + R (2) Module taught in: German or English									
	Method of ass		a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									

11-RTT-161-m01	Theory	Theory of Relativity											
	ECTS	6	Duration	ı	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	:S	·		+ R (1)		•						
				Module taught in: German or English									
	Method	d of ass	sessment	b) ora) written examination (approx. 90 to 120 minutes) or) oral examination of one candidate each (approx. 30 minutes) or) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
				d) pro e) pro If a w form	by oral examination in groups (groups of 2, approx. 30 minutes per candidate) or by presentation/talk (approx. 8 to 10 pages) or by presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, he lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Langi	uage of assessme	nt: German and/or English the semester in which the course is offered and i							
11-QVTP-161-m01	Many Body Quantum Theory												
	ECTS	8	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	S			V (4) + R (2) Module taught in: German or English								
	Method of assessment			b) ora c) ora d) pro e) pro If a w form the le Lange									
11-RMFT-161-m01		_			ds in Field Theory								
	ECTS	8	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	·S		V (4) + R (2) Module taught in: German or English									
	Method	d of ass	sessment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									

11-PKS-161-m01	Physics of Complex Systems											
	ECTS	6	Duration	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	S		V (2) + R (2) Module taught in: German or English								
	Method	d of asse	b) o c) oi d) p e) p If a v form the Lang	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
11-QIC-161-m01	Quantu	ım Inforn		antum Computing	the semester in which the course is offered and	m the subsequent se	ester					
		6	Duration	1 semester Method of grading numerical grade Modul level graduate								
	Course	S		V (3) + R (1) Module taught in: German or English								
			b) o c) or d) p e) p If a v form the Lang Asse	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
	Module comple	es succes eted	ssfully 11-Q	M2 or 11-TFK								

11-SLQ-232-m01	Black Holes												
	ECTS	6	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses	5		V (3) + R (1) Module taught in: German or English									
	Method	l of asse	essment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-APM-242-m01	Astrophysics												
	ECTS	6	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			V (2) + R (2) Module taught in: German or English									
	Method	l of asse	essment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
	Additional Information			Approval from examination committee required.									

11-ATP-242-m01	Atmos	pheric P	hysics									
	ECTS	6	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	:S		V (2) -			•					
					Module taught in: German or English							
	Method	d of asse	essment	a) written examination (approx. 90 to 120 minutes) or								
				b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
				d) project report (approx. 8 to 10 pages) or								
				e) pre	e) presentation/talk (approx. 30 minutes).							
					If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the							
					orm of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, he lecturer must inform students about this by four weeks prior to the original examination date at the latest.							
					anguage of assessment: German and/or English							
					Assessment offered: In the semester in which the course is offered and in the subsequent semester							
11-0QS-242-m01	Open Quantum Systems											
	ECTS	6	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	!S		V (3) + R (1)								
				Module taught in: German or English								
	Method	d of asse	essment	a) wri	tten examination (a	pprox. 90 to 120 minutes) or						
						ne candidate each (approx. 30 minutes) or oups (groups of 2, approx. 30 minutes per candidate	e) or					
					ject report (approx.		2) 01					
				e) pre	sentation/talk (app	prox. 30 minutes).						
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the								
				form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Language of assessment: German and/or English								
				Assessment offered: In the semester in which the course is offered and in the subsequent semester								

Module Group The	oretical S	olid St	ate Physi	ics							
11-TFK-161-m01	Theoreti	cal So	lid State	Physic	S						
	ECTS	8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Courses				V (4) + R (2) Module taught in: German or English						
				a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
11-TFK2-161-m01	Theoretical Solid State Physics 2										
	ECTS	8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Courses			V (4) + R (2) Module taught in: German or English							
	Method of assessment			a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							

11-FTFK-161-m01	Field Theory in Solid State Physics												
	ECTS	8	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses	S		V (4) +		·	•						
				Module taught in: German or English									
	Method	l of ass	essment	a) written examination (approx. 90 to 120 minutes) or									
					o) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
				d) pro	d) project report (approx. 8 to 10 pages) or								
				e) pre	sentation/talk (ap	oprox. 30 minutes).							
						was chosen as method of assessment, this mation of one candidate each or an oral examina							
						n students about this by four weeks prior to the							
						nt: German and/or English							
				Asses	sment offered: In	the semester in which the course is offered an	d in the subsequent se	emester					
11-TOPO-161-mo1	Topolog												
		6	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses				V (3) + R (1) Module taught in: German or English								
	Method	l of ass	essment	a) written examination (approx. 90 to 120 minutes) or									
				b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or									
				d) project report (approx. 8 to 10 pages) or									
				e) presentation/talk (approx. 30 minutes).									
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination in groups. If the method of assessment is changed,									
					form of an oral examination of one candidate each of an oral examination in groups. If the method of assessment is changed the lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Language of assessment: German and/or English									
				Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-TFP-161-m01			olid State I		S								
	ECTS	6	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses	S		V (3) + R (1)									
	AA - 41	1 - 6		Module taught in: German or English a) written examination (approx. 90 to 120 minutes) or									
	Method	or ass				(approx. 90 to 120 minutes) or one candidate each (approx. 30 minutes) or							
						roups (groups of 2, approx. 30 minutes) or	ndidate) or						
				d) pro	ject report (appro	x. 8 to 10 pages) or	,						
						oprox. 30 minutes).	ay ba abangad and acc	accoment may instead take the					
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English									
				Asses	sment offered: In	the semester in which the course is offered an	d in the subsequent se	emester					

11-TSL-161-m01	Theory of Superconductivity												
	ECTS	6	Duration	ı	1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses				+ R (1)								
				Module taught in: German or English									
	Method	of ass	essment	a) wr	a) written examination (approx. 90 to 120 minutes) or								
					o) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
				d) pro	d) project report (approx. 8 to 10 pages) or								
				e) pre	esentation/talk (ap	oprox. 30 minutes).	he changed and acc	sacement may instead take the					
						was chosen as method of assessment, this may ation of one candidate each or an oral examination							
				the le	cturer must inforn	n students about this by four weeks prior to the or							
						nt: German and/or English							
CMC	Community	-4:				the semester in which the course is offered and in	n the subsequent se	emester					
11-CMS-161-m01		ationa 8	Material			Mothod of avadina humavical avada	Modulloval	Torre durate					
			Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses			V (4) + R (2) Module taught in: German or English									
	Method	of ass	essment	a) written examination (approx. 90 to 120 minutes) or									
				b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or									
				d) project report (approx. 8 to 10 pages) or									
				e) presentation/talk (approx. 30 minutes).									
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed,									
					the lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Langi	Language of assessment: German and/or English								
				Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-KFT-161-m01			d Theory										
	ECTS	6	Duration		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses			V (3) + R (1)									
	NA - 411	- C		Module taught in: German or English a) written examination (approx. 90 to 120 minutes) or									
	Method	or ass	essment			(approx. 90 to 120 minutes) or one candidate each (approx. 30 minutes) or							
						groups (groups of 2, approx. 30 minutes per candi	date) or						
				d) pro	oject report (appro	x. 8 to 10 pages) or	•						
				e) presentation/talk (approx. 30 minutes).									
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed to the control of the									
				the lecturer must inform students about this by four weeks prior to the original examination date at the latest.									
				Language of assessment: German and/or English									
				Asses	ssment offered: In	the semester in which the course is offered and in	n the subsequent se	emester					

11-KFT2-161-m01	Conformal Field Theory 2											
	ECTS 6	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses		V (3) ·									
				Module taught in: German or English								
	Method of a	ssessment	a) wri	a) written examination (approx. 90 to 120 minutes) or o) oral examination of one candidate each (approx. 30 minutes) or								
					groups (groups of 2, approx. 30 minutes) or	idate) or						
			d) pro	d) project report (approx. 8 to 10 pages) or								
			e) pre	sentation/talk (a	oprox. 30 minutes).							
					n was chosen as method of assessment, this may ation of one candidate each or an oral examinatio							
					n students about this by four weeks prior to the o							
			Langu	lage of assessme	nt: German and/or English							
				ssment offered: In	the semester in which the course is offered and i	n the subsequent se	emester					
11-MSF-161-m01	Magnetism			i								
	ECTS 6	Duratio		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses			(3) + R (1) lodule taught in: German or English								
	Method of a	ssessment	a) wri	a) written examination (approx. 90 to 120 minutes) or								
			b) ora	b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
			d) pro	d) project report (approx. 8 to 10 pages) or								
				e) presentation/talk (approx. 30 minutes).								
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English								
			Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-TQP-161-mo1	Topological	Quantum P	hysics									
	ECTS 6	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses		V (3) ·	V (3) + R (1)								
			Module taught in: German or English									
	Method of a	ssessment			(approx. 90 to 120 minutes) or one candidate each (approx. 30 minutes) or							
					groups (groups of 2, approx. 30 minutes) or	idate) or						
					ox. 8 to 10 pages) or	idate) of						
			e) pre	e) presentation/talk (approx. 30 minutes).								
			If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the									
			form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.									
			Language of assessment: German and/or English									
				Assessment offered: In the semester in which the course is offered and in the subsequent semester								

11-CRP-161-mo1	Renorm	alizati	on Group	and Cr	itical Phenomena							
	ECTS	6	Duration)	1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	5	,		V (3) + R (1)							
				Module taught in: German or English								
	Method	of ass	sessment	a) wri	a) written examination (approx. 90 to 120 minutes) or							
					oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or							
					d) project report (approx. 8 to 10 pages) or							
				e) pre	e) presentation/talk (approx. 30 minutes).							
						was chosen as method of assessment, this may be						
						ion of one candidate each or an oral examination is students about this by four weeks prior to the orig						
						:: German and/or English	inat examination	date at the latest.				
						he semester in which the course is offered and in	the subsequent s	emester				
11-BWW-161-mo1	Bosonis	sation	and Intera	ctions	in One Dimension		'					
	ECTS	6	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	5			+ R (1)	an ar English						
	Mathad	of acc		Module taught in: German or English a) written examination (approx. 90 to 120 minutes) or								
	Method of assessment			b) ora	b) oral examination of one candidate each (approx. 30 minutes) or							
				c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
				d) project report (approx. 8 to 10 pages) or								
				e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the								
				form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed,								
				the lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Language of assessment: German and/or English								
	_			Assessment offered: In the semester in which the course is offered and in the subsequent semester								
11-EIT-161-m01	Gauge 1				T .		1					
		6	Duration		1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	5		V (3) + R (1) Module taught in: German or English								
	Method	of ass				approx. 90 to 120 minutes) or						
				b) ora	al examination of or	ne candidate each (approx. 30 minutes) or						
						oups (groups of 2, approx. 30 minutes per candida	ate) or					
					ject report (approx							
				e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the								
				form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed								
				the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English								
						:: German and/or English he semester in which the course is offered and in t	the subsequent s	amastar				
				Asses	Siment Onereu; III ti	The semester in which the course is offered and in	ine subsequent si	- Illestei				

11-GGD-161-m01	Introduction to Gauge/Gravity Duality											
	ECTS 8	Duratio	n 1 semester	Method of grading numerical grade	Modul level	graduate						
	Courses		V (4) + R (2)		,							
			Module taught in: German or English									
	Method o	of assessment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or									
				c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
			d) project report (approx. 8 to 10 pages) or									
			e) presentation/talk (e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the								
				nation of one candidate each or an oral examination								
			the lecturer must info	rm students about this by four weeks prior to the o								
				ent: German and/or English	in the subsequent s	master						
11-EFQ-161-mo1	Assessment offered: In the semester in which the course is offered and in the subsequent semester Introduction to Fractional Quantisation											
11-Li Q-101-iii01	ECTS 6			Method of grading numerical grade	Modul level	graduate						
	Courses	Duratio	V (3) + R (1)	Method of grading humeneat grade	Modulitevel	graduate						
	Courses		W (3) + R (1) Module taught in: German or English									
	Method o	of assessment	a) written examination (approx. 90 to 120 minutes) or									
			b) oral examination o	b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or								
			d) project report (approx. 8 to 10 pages) or									
			e) presentation/talk (approx. 30 minutes).									
			If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the									
			form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English									
			Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-TEF-161-m01			lectronic Systems									
	ECTS 6	Duratio		Method of grading numerical grade	Modul level	graduate						
	Courses		V (3) + R (1)									
	Matha al a	£	Module taught in: German or English a) written examination (approx. 90 to 120 minutes) or									
	Method	or assessment		n (approx. 90 to 120 minutes) or fone candidate each (approx. 30 minutes) or								
			c) oral examination in	groups (groups of 2, approx. 30 minutes per cand	idate) or							
			d) project report (app									
			e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the									
			form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed,									
			the lecturer must inform students about this by four weeks prior to the original examination date at the latest.									
			Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
			Assessment offered:	in the semester in which the course is offered and	iii trie subsequent so	emester						

11-FTAS-161-m01	Field Th	neoretic	cal Aspect	s of So	olid State Physics	-					
	ECTS	6	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Course	S			V (3) + R (1) Module taught in: German or English						
	Method of assessment			a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
Module Group Astr	ophysic	5									
11-AKM-161-mo1	Cosmo	logy									
	ECTS	6	Duration	า	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Course	S			+ R (1) ıle taught in: Germa	n or English					
	Method	l of ass	essment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							

11-AST-161-m01	Theoretical Astrophysics											
	ECTS 6	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses	·		V (2) + R (2) Module taught in: German or English								
	Mathadaf	assessment		a) written examination (approx. 90 to 120 minutes) or								
	Method of	assessmem	b) ora c) ora d) pro e) pro	b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes).								
			form the le Lang Asse	a written examination was chosen as method of assessment, this may be changed and assessment may instead take the rm of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, e lecturer must inform students about this by four weeks prior to the original examination date at the latest. nguage of assessment: German and/or English sessment offered: In the semester in which the course is offered and in the subsequent semester								
11-EPP-161-m01		n to Plasma	_ <u> </u>	cs								
	ECTS 6	Duratio		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses			(2) + R (2) odule taught in: German or English								
	Method of	assessment	b) oracle	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead to form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
11-APL-161-m01		y Astrophys										
	ECTS 6	Duratio		1 semester	Method of grading numerical grade	Modul level	graduate					
	Courses		V (3) + R (1) Module taught in: German or English									
	Method of	assessment	b) oracle	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead ta form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is of the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								

11-NMA-161-mo1	Computational Astrophysics												
	ECTS 6	Duratio	n	1 semester	Method of grading numeric	cal grade	Modul level	graduate					
	Courses			V (3) + R (1) Module taught in: German or English									
	Method of a	ssessment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester										
Module Group The	oretical Eleme	ementary Particle Physics											
11-RQFT-161-m01	Relativistic Quantum Field Theory												
	ECTS 8 Duratio		n	1 semester	Method of grading numeric	al grade	Modul level	graduate					
	Courses		V (4) + R (2) Module taught in: German or English										
	Method of a	ssessment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester										

11-QFT2-161-m01	Quantum Field Theory II											
	ECTS	8	Duration	ı	1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	S			+ R (2)		,					
				Module taught in: German or English								
	Method	d of ass	essment	a) wr	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or							
					c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or							
				e) pro	esentation/talk (ap	oprox. 30 minutes). was chosen as method of assessment, this may	he changed and ass	sessment may instead take the				
						ation of one candidate each or an oral examination						
						n students about this by four weeks prior to the or	riginal examination	date at the latest.				
						nt: German and/or English	n the subsequent so	amastar				
11-TEP-161-m01	Theoret	Assessment offered: In the semester in which the course is offered and in the subsequent semester Theoretical Elementary Particle Physics										
		8	Duration		1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses		_l		+ R (2)							
					Module taught in: German or English							
	Method	d of ass	essment	a) wr	a) written examination (approx. 90 to 120 minutes) or							
				b) ora	b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or							
				d) project report (approx. 8 to 10 pages) or								
				e) presentation/talk (approx. 30 minutes).								
					If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.							
				Lang	Language of assessment: German and/or English							
				Assessment offered: In the semester in which the course is offered and in the subsequent semester								
11-ATTP-161-m01					l Elementary Partio							
		6	Duration		1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	S 		V (3) + R (1) Module taught in: German or English								
	Method	d of ass	essment			(approx. 90 to 120 minutes) or						
						one candidate each (approx. 30 minutes) or roups (groups of 2, approx. 30 minutes per candi	data) or					
						x. 8 to 10 pages) or	uate) of					
				e) pre	e) presentation/talk (approx. 30 minutes).							
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the								
				form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.								
				Lang	anguage of assessment: German and/or English							
				Asse	Assessment offered: In the semester in which the course is offered and in the subsequent semester							

11-BSM-161-m01	Models	s Beyon	d the Stan	dard Model of Ele	mentar	y Particle Physics	Models Beyond the Standard Model of Elementary Particle Physics												
	ECTS	6	Duration	1 semeste	•	Method of grading numerical grade		Modul level	graduate										
	Course	<u>!</u> S		V (3) + R (1)	_	F 1:1													
	Matha			Module taught in					_										
	method	a or ass		a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes).															
				If a written exami	a written examination was chosen as method of assessment, this may be changed and assessment may instead take the orm of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed,														
						on of one candidate each or an oral exam students about this by four weeks prior to													
				Language of asse	ssment	: German and/or English	_												
				Assessment offer	ed: In th	ne semester in which the course is offered	d and in the s	ubsequent s	emester										
Module Group Curre																			
11-EXMP5-161-m01			_																
	ECTS	5	Duration		•	Method of grading numerical grade		Modul level	graduate										
	Course			/ (2) + R (2)															
	Metho	d of ass		a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or															
				c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or															
				d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes)															
					sessment may instead take the														
				form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English															
	other p	rerequi				on committee required.													
11-EXMP6-161-mo1						•	'		`										
	ECTS	6	Duration	1 semeste		Method of grading numerical grade		Modul level	graduate										
	Course	.S		V (3) + R (1)			•												
	Method	d of ass				pprox. 90 to 120 minutes) or													
						e candidate each (approx. 30 minutes) or		nr											
				c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or															
				e) presentation/talk (approx. 30 minutes)															
				If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is change the lecturer must inform students about this by four weeks prior to the original examination date at the latest.															
	. 1			Language of assessment: German and/or English															
	other p	rerequi	sites	Approval from examination committee required.															

11-EXMP7-161-mo1	Current Topics of Mathematical Physics											
,	ECTS	7	Duration		1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	S	•	V (3) -	V (3) + R (1)							
			essment	a) wri b) ora c) ora d) pro e) pre If a wri form of the le	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English							
	other p	rerequis	sites			on committee required.						
11-EXMP8-161-mo1	Current	Topics	of Mathe	matica	al Physics	·						
	ECTS	8	Duration	ı	1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	S		V (4) + R (2)								
				b) ora c) ora d) pro e) pre If a wi form o the le Langu	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English							
6 1 6 1 1 5	other p				oval from examinati	on committee required.						
Subfield Research i												
10-M=GAL- G-161-mo1			oups - Alg			Mathada faradina laurada laurada	AA a alect to cont	Lawa duata				
G 101 moi		10	Duration		1 semester	Method of grading numerical grade	Modul level	graduate				
	Courses	5		` '	V (2) + S (2) Module taught in: German and/or English							
	Method of assessment		talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									

10-M=G-	Resear	rch in G	roups - Di	screte	Mathematics	1						
DIM-161-mo1	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	?S			/ (2) + S (2) Module taught in: German and/or English							
	Metho	d of ass	sessment		alk (60 to 120 minutes)							
				Langi	Language of assessment: German or English							
10-M=GD-	Pessen	Assessment offered: In the semester in which the course is offered and in the subsequent semester Research in Groups - Dynamical Systems and Control Theory										
SC-161-mo1	ECTS	10	Duration		1 semester	Method of grading	numorical grado	Modul level	graduate			
	Course		Duration		+ S (2)	Method of grading	numerical grade	Modulitevel	graduate			
	Course	.5			lle taught in: Germa	n and/or English						
	Metho	Method of assessment			anguage of assessment: German or English ssessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=G-	Resear	rch in G	roups - Co	mplex	Analysis							
COA-161-mo1	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	Courses			+ S (2) le taught in: Germa	nn and/or English		1				
	Metho	Method of assessment			lage of assessment	t: German or English he semester in which	the course is offered a	and in the subsequent se	emester			
10-M=GGM-	Research in Groups - Geometry and Topology											
T-161-m01	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	Courses			V (2) + S (2) Module taught in: German and/or English							
	Metho	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
10-M=GM-	Resear	rch in G	roups - Ma	them	atics in Context							
CX-161-m01	ECTS				1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es			V (2) + S (2) Module taught in: German and/or English							
	Method of assessment			Langi	k (60 to 120 minutes) nguage of assessment: German or English sessment offered: In the semester in which the course is offered and in the subsequent semester							

10-M=GM-	Resear	ch in Gr	oups - Ma	athema	atics in the Sciences	;						
SC-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	-		V (2) + S (2) Module taught in: German and/or English							
	Method	d of asse	essment	Langi	alk (60 to 120 minutes) anguage of assessment: German or English assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=G-	Resear	ch in Gr	oups - M	easure	sure and Integral							
MAI-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ S (2) lle taught in: Germar	n and/or English		<u> </u>				
	Method of assessment			Langi	anguage of assessment: German or English ssessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=GN-	Resear	ch in Gr	oups - Nu	ımerica	erical Mathematics and Applied Analysis							
MA-161-mo1	ECTS	TS 10 Duratio		n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ S (2) lle taught in: Germar	n and/or English		,				
	Method of assessment			Langi	60 to 120 minutes) lage of assessment: ssment offered: In th		the course is offered	and in the subsequent s	emester			
10-M=GROC-161-	Research in Groups - Robotics, Optimization and Control Theory											
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		V (2) + S (2) Module taught in: German and/or English								
	Method	d of asse	essment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
10-M=GT-	Resear	ch in Gr	oups - Ti	me Ser	ies Analysis							
SA-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	•	V (2) + S (2) Module taught in: German and/or English								
	Method of assessment			Langu	alk (60 to 120 minutes) anguage of assessment: German or English assessment offered: In the semester in which the course is offered and in the subsequent semester							

10-M=G-	Rese	earch in G	oups - St	atistic	 S			-	-			
STA-161-m01	ECTS	3 10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cour	rses			+ S (2) le taught in: Germar	n and/or English						
	Meth	nod of ass	essment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=GNTH-161-	Research in Groups - Number Theory											
mo1	ECTS	5 10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ S (2) le taught in: Germar	n and/or English						
	Method of assessment			Langi	alk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=GC-	Research in Groups - Control Theory of Quantum Mechanical Systems											
QS-161-mo1	ECTS	5 10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ S (2) le taught in: Germar	n and/or English						
	Meth	nod of ass	essment	Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							
10-M=GD-	Research in Groups - Differential Geometry											
GE-161-m01	ECTS	3 10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cour	ses		V (2) + S (2) Module taught in: German and/or English								
	Meth	nod of ass	essment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester								
10-M=GDF-	Rese	earch in Gi	oups - De	forma	tion Quantization			'				
Q-161-m01	ECTS	5 10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cour	rses		V (2) + S (2) Module taught in: German and/or English								
	Method of assessment			Langi	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester							

10-M=GN- LA-161-m01	Research in Groups - Non-linear Analysis												
	ECTS 10 Duration		n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Course	S	·	V (2) + S (2) Module taught in: German and/or English									
	Method	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
10-M=GO-	Resear	ch in G	roups - O _l	erato	erator Algebras								
PA-161-m01	ECTS 10 Duration			n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		V (2) + S (2) Module taught in: German and/or English									
	Method	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-MDG-161-	Study Group Modern Differential Geometry												
mo1	ECTS 10 Duratio			n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S	·	S (4) Module taught in: German or English									
	Method	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-SPG-161-	Study Group Symplectic and Poisson Geometry												
m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S		S (4) Module taught in: German or English									
	Method	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-OAD-161- mo1	Study	Group (Operator A	Algebras and Representation Theory									
	ECTS 10 Duratio			n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S	,	S (4) Module taught in: German or English									
	Method	d of ass	sessment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									

11-AG-HAL-161- m01	Study Group Hopf Algebras												
	ECTS	5 10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cou	rses		S (4) Module taught in: German or English									
	Met	hod of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-KFT-161-m01			onformal	Field 1	Field Theory								
	ECTS 10 Duratio			1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses			S (4) Module taught in: German or English									
	Met	hod of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-STM-161-	Study Group Statistical Mechanics												
mo1	ECTS 10 Duratio			n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			S (4) Module taught in: German or English									
	Met	hod of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-QFT-161-m01	Study Group Quantum Field Theory												
	ECTS	5 10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			S (4) Module taught in: German or English									
	Met	hod of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
11-AG-RGE-161-	Stud	ly Group R	iemannia	n Geometry									
m01	ECTS 10 Duration		n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Cou	rses		S (4) Module taught in: German or English									
	Met	hod of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									

11-AG-MPH-161-	Study Group Mathematical Physics											
mo1	ECTS 10 Duration		n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S	•	S (4) Module taught in: German or English								
	Method	d of ass	essment									
Thesis (50 ECTS cre	edits)											
11-FS-MP-161-m01	Professional Specialization Mathematical Physics											
	ECTS 10 Duratio		Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	graduate			
11-MP-MP-161-m01	Courses			S (2) Module taught in: German or English								
	Method	d of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English								
	Scientific Methods and Project Management Mathematical Physics											
	ECTS 10 Duratio		n	1 semester	Method of grading	(not) successfully completed	Modul level	graduate				
	Course	S	,	R (6) Module taught in: German or English								
	Method	d of ass	essment	talk (60 to 120 minutes) Language of assessment: German and/or English								
11-MA-MP-161-m01	1 Master Thesis Mathematical Physics											
	ECTS	30	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		No courses assigned to module								
	Method	d of ass	essment	Master's thesis (750 to 900 hours total) Registration and assignment of topic in consultation with supervisor. Language of assessment: German and/or English								
	other p	rerequi	sites	The supervisor may make the successful completion of certain modules that are relevant for the respective topic a prerequisite for the assignment of the topic.								
	Additio	nal Info	ormation	Time	Time to complete: 6 months.							