

## **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: 2022

Examination regulations version: 2022

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)):

02-Feb-2022 (2022-1)

16-Nov-2022 (2022-80)

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		1									
	ECTS		Duration	(in semesters)	Method of grading		Module level					
	Courses		To be sp	ecified in the form X	(y) with course type ?	X abbreviated as specified abo	ve and number of we	ekly contact hours y				
	Method of as	ssessme	ent	-								
	Only after su completion o		l if applica	able								
	Other prereq	uisites	if applica	applicable								
	Participants on of places		ocati- if applica	if applicable								
	Additional in	formati	on if applica	if applicable								
	Referred to in	n LPO I	if applica	able (examination re	egulations for teachin	g-degree programmes)						

<b>Compulsory Course</b>	es (20 EC	TS cred	lits)									
10-M=MP1-161-	Analysi	s and G	eometry	of Clas	sical Systems							
mo1	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	S			+ Ü (2) ıle taught in: Germa	n and/or English						
	Method	l 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 creditable for bonus								
10-M=MP2-161-	Algebra	a and D	ynamics o	of Quai	ntum Systems							
mo1	ECTS	10	Duratio	1	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 ass	essment	minut Langt	tes) or c) oral exami	pprox. 90 to 120 min nation in groups (gro : German or English	utes, usually chosen) o ups of 2, 15 minutes pe	r b) oral examination of r candidate)	one candidate each (approx. 20			
<b>Compulsory Electiv</b>	es (50 E	CTS cre	dits)									
Subfield Mathema	tics (min	. 8 ECT:	S credits)									
10-M=AAAN-161-	Applied	l Analy:	sis									
mo1	ECTS	10	Duratio	1	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 ass	essment	minut Asses Langu	tes) or c) oral exami ssment offered: In t	nation in groups (gro	utes, usually chosen) o ups of 2, 15 minutes pe the course is offered ar	r candidate)	one candidate each (approx. 20			
10-M=AAL-	Topics	in Alge	bra		,			,				
G-161-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	S			+ Ü (2) ıle taught in: Germa	n and/or English		•				
	Method	l of ass	essment	minut Asses Langu	tes) or c) oral exami ssment offered: In t	nation in groups (gro	utes, usually chosen) o ups of 2, 15 minutes pe the course is offered ar	r candidate)	one candidate each (approx. 20			

10-M=ADG-	Differer	ntial Ge	ometry			,		'					
M-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses	S			+ Ü (2) ıle taught in: Germa	n and/or English							
	Method	of ass	essment	minu Asses 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) Assessment offered: In the semester in which the course is offered and in the subsequent semester canguage of assessment: German or English creditable for bonus								
10-M=AFT-	Comple	x Analy	/sis										
H-161-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses	S			(4) + Ü (2) odule taught in: German and/or English								
	Method	l of ass	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus										
10-M=AGMS-161-	Geome	tric Stru	ıctures	:tures									
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 ass	essment	minu Asses Langu	tes) or c) oral exami	nation in groups (gro ne semester in which	utes, usually chosen) or but a signification of 2, 15 minutes per of the course is offered and	candidate)	one candidate each (approx. 20				
10-M=AIST-161-	Industr	ial Stat	istics 1					,					
mo1	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses	s 	V (4) + Ü (2) Module taught in: German and/or English										
	Method of assessmen				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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus								

10-M=ALTH-161-	Lie The	ory	1		-	1							
mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S	·		+ Ü (2) ıle taught in: Germa	n and/or English							
	Method	d of ass	essment	minu Asses Langi	written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (appr nutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) sessment offered: In the semester in which the course is offered and in the subsequent semester nguage of assessment: German or English editable for bonus								
10-M=ANG-	Numeri	ic of Lar	ge Syster	ns of E	quations								
G-161-mo1	ECTS	10	Duration	า	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S			+ Ü (2) Ile taught in: Germa	n and/or English							
	Method	d of ass	essment	ment a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (app minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus									
10-M=AOP-	Basics	Basics in Optimization											
T-161-mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	S			+ Ü (2) Ile taught in: Germa	n and/or English		·					
	Method	d of ass	essment	minu Asses Langi	tes) or c) oral exami	nation in groups (gro ne semester in which	utes, usually chosen) or b) ups of 2, 15 minutes per ca the course is offered and i	ındidate)	f one candidate each (approx. 20				
10-M=ARTH-161-	Contro	l Theory	,										
mo1	ECTS	10	Duration	า	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus									

10-M=ASM-	Stochas	Stochastic Models of Risk Management												
R-161-mo1	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	5			V (4) + Ü (2) Module taught in: German and/or English									
	Method	l of ass	essment	minut Asses 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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus									
10-M=AST-	Stochas	stical P	rocesses											
P-161-m01	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	5	V (4) + Ü (2) Module taught in: German and/or English											
	Method	l of ass	essment	minut Asses Langu	es) or c) oral exami ssment offered: In th	nation in groups (gro	nutes, usually chosen) or oups of 2, 15 minutes per I the course is offered an	candidate)	one candidate each (approx. 20					
10-M=A-	Topolog	gy												
TOP-161-mo1	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	5		V (4) - Modu	+ Ü (2) le taught in: Germa	n and/or English								
	Method	l of ass	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus										
10-M=AZ-	Time Se	eries Ar	alysis											
RA-212-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Courses	5		V (4) + Ü (2) Module taught in: German and/or English										
	Method	l 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: Only when announced in the semester in which the courses are offered and in the subsequent semester creditable for bonus										

10-M=AZTH-161-	Numbe	r Theor	y			1		,				
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ Ü (2) ıle taught in: Germa	n and/or English						
	Method	d of ass	essment	minu Asses Langi	) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each ( ninutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) ssessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English reditable for bonus							
10-M=AGP-	Giovan	ovanni Prodi Lecture (Master)										
Cin-152-m01	ECTS	5	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	V (3) + Ü (1) Module taught in: English									
	Method	d of ass	essment	minu Asses Langi	tes) or c) oral exami	nation in groups (gro ne semester in which	tes, usually chosen) or b ups of 2, approx. 10 minu the course is offered and	utes per candidate)	one candidate each (approx. 15			
10-M=VA-	Selected Topics in Analysis											
NA-161-m01	ECTS	10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ Ü (2) ıle taught in: Germa	n 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 minutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus								
10-M=VAT-	Algebra	aic Topo	ology					,				
P-161-mo1	ECTS	10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus								

10-M=VGDS-161-	Grou	ps and th	eir Repre	sentati	ons								
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses			+ Ü (2) le taught in: Germar	n and/or English		•					
	Meth	nod of ass	essment	minut Asses Langu	) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each ninutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) ssessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English reditable for bonus								
10-M=V-	Geor	metrical M	echanics										
GEM-161-m01	ECTS 10 Duration			n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses			(4) + Ü (2) odule taught in: German and/or English								
		nod of ass		minut Asses Langu	written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 inutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) assessment offered: In the semester in which the course is offered and in the subsequent semester in graph or English editable for bonus								
10-M=VIST-161-		Industrial Statistics 2											
mo1	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses			V (4) + Ü (2) Module taught in: German and/or English								
	Meth	nod of ass	essment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate eminutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus									
10-M=V-	Field	Arithmet	ics					,					
KAR-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses		Modu	V (4) + Ü (2) Module taught in: German and/or English								
	Meth	nod of ass	essment	minut Asses Langu	es) or c) oral examir	nation in groups (gro e semester in which	utes, usually chosen) or bups of 2, 15 minutes per cothe course is offered and	candidate)	f one candidate each (approx. 20				

10-M=VN-	Numeric o	of Partial Diffe	ential	Equations							
PE-161-mo1	ECTS 10	o Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	,		+ Ü (2) le taught in: Germa	n and/or English						
			minut Asses Langu 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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English Creditable for bonus							
10-M=VOP-	Selected '	Topics in Opti	mizatio	n							
T-161-m01	ECTS 10	o Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			+ Ü (2) le taught in: Germa	n and/or English						
	Method o	f assessment	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approminutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus								
10-M=V-	Mathema	tical Statistics									
STA-212-m01	ECTS 10	o Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			+ Ü (2) le taught in: Germa	n and/or English						
	Method o	f 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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus								
10-M=V-	Discrete A	<b>Mathematics</b>	•								
DIM-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 o	f 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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus								

10-M=VD-	Dyna	Dynamical Systems													
SY-161-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate						
	Cour	ses			+ Ü (1) le taught in: Germar	and/or English									
	Meth	od of ass	essment	minut Asses Langu	) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (appro ninutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) .ssessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English reditable for bonus										
10-M=V-	Aspe	cts of Ge	ometry												
GEO-161-mo1	ECTS	5	Duratio	n 1 semester		Method of grading	numerical grade	Modul level	graduate						
	Cour	ses			(3) + Ü (1) odule taught in: German and/or English										
				minut Asses Langu credit	written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 inutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) assessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English editable for bonus										
10-M=V- KOM-161-m01			Continuu		1										
KUW-161-11101	ECTS		Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate						
	Cour	ses			V (3) + Ü (1) Module taught in: German and/or English										
	Meth	od of ass	essment	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (a minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus											
10-M=VMB-	Math	ematical	Imaging												
V-161-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate						
	Cour	ses			V (3) + Ü (1) Module taught in: German and/or English										
	Meth	od of ass	essment	minut Asses Langu	es) or c) oral examir	iation in groups (gro e semester in which	ups of 2, approx. 10 m		one candidate each (approx. 15						

10-M=VMPH-161-	Selecte	ed Topic	s in Math	emati	cal Physics				-			
mo1	ECTS	10	Duratio	n	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	minu Asses Langi	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx ninutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English Breditable for bonus							
10-M=V-	Selecte	ed Topic	s in Cont	rol The	l Theory							
TRT-161-m01	ECTS 10 Duration			n 1 semester		Method of grading	numerical grade	Modul level	graduate			
	Course	S			V (4) + Ü (2) Module taught in: German and/or English							
	Method	d of ass	essment	minu Asses Langi	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English Creditable for bonus							
10-M=VI-	Inverse	Proble	ms 1					·				
PR-222-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		V (3) + Ü (1) Module taught in: German and/or English								
	Method	d of ass	essment	minu Asses Langs	tes) or c) oral exam ssment offered: In	nination in groups (gro	ites, usually chosen) or b) or ups of 2, approx. 10 minutes the course is offered and in	per candidate)	one candidate each (approx. 15			
10-M=VMT-	Module	e Theory	y	•								
H-161-m01			Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			V (3) + Ü (1) Module taught in: German and/or English								
	Method	d of ass	essment	minu Asses Langs	tes) or c) oral exam ssment offered: In	nination in groups (gro	ites, usually chosen) or b) or ups of 2, approx. 10 minutes the course is offered and in	per candidate)	one candidate each (approx. 15			

10-M=V-	Non-	-linear Ana	lysis										
NAN-161-mo1	ECTS	5 5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses		V (3) +	- Ü (1) le taught in: German	and/or English							
	Meth	nod of asso	essment	minut Asses Langu	) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (approx. 15 ninutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) ssessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English reditable for bonus								
10-M=VOST-161-	Opti	mal Contro	ol										
mo1	ECTS	5 5	Duratio		1 semester	Method of grading	graduate						
	Cour	ses			(3) + Ü (1) odule taught in: German and/or English								
	Meth	nod of asso	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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus										
10-M=VV-	Netv	vorked Sys	tems										
SY-161-mo1	ECTS 5 Duratio			,	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	rses		V (3) + Ü (1) Module taught in: German and/or English									
	Meth	nod of asso	essment	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus									
10-M=VIP2-222-	Inve	rse Proble	ms 2										
mo1	ECTS	5 5	Duratio		1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses			V (3) + Modu	- Ü (1) le taught in: German	and/or English							
	Meth	nod of asse	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus									

10-M=VAFT-222-	Selected Topics in Complex Analysis											
mo1	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	,	V (3) → Modu		an and/or English		,				
	Method	d of ass	essment	b) ora c) ora Asses Langu	l examination of ole l examination in g sment offered: In	one candidate each (a roups (groups of 2, ap	prox. 10 minutes per c		emester			
10-M=AAZ-	Analyti	ic Numb	er Theory									
T-222-m01	ECTS	10	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			4) + Ü (2) dule taught in: German and/or English							
	Method	d of ass	essment	b) ora c) ora Asses Langu	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) is essessment offered: In the semester in which the course is offered and in the subsequent semester in guage of assessment: German or English editable for bonus							
10-M=VK-	Complex Geometry											
GE-161-m01	ECTS	10	Duration	on 1 semester		Method of grading numerical grade		Modul level	graduate			
	Courses			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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English creditable for bonus								
10-M=VPD-	Partial	Differe	ntial Equa	tions o	of Mathematical P	hysics		<u> </u>				
P-161-mo1	ECTS	10	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English creditable for bonus								

10-M=V-	Pseudo R	Pseudo Riemannian and Riemannian Geometry												
PRG-161-mo1	ECTS 10	Duratio	n 1 seme	ster	Method of grading	numerical grade	Modul level	graduate						
	Courses	·	V (4) + Ü (2) Module taugh	t in: Germa	n and/or English									
	Method o	fassessment	minutes) or c) Assessment of Language of a	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English Creditable for bonus										
10-M=AF-	Functiona	ıl Analysis					,							
AN-161-mo1	ECTS 10	o Duratio	n 1 seme	ster	Method of grading	numerical grade	Modul level	graduate						
	Courses	·	V (4) + Ü (2) Module taught in: German and/or English											
	Method o	f assessment	minutes) or c) Assessment o	oral exami offered: In the essessment	ination in groups (gro	ups of 2, 15 minutes p	or b) oral examination of per candidate) and in the subsequent se	f one candidate each (approx. 20						
10-M=VAD-	Applied D	ifferential Geo												
G-161-m01	ECTS 10	o Duratio	n 1 seme	ster	Method of grading	numerical grade	Modul level	graduate						
	Courses		V (4) + Ü (2) Module taugh	t in: Germa	nn and/or English									
	Method o	f assessment	minutes) or c) Assessment o	oral exami offered: In the ssessment	ination in groups (gro	ups of 2, 15 minutes p	or b) oral examination of per candidate) and in the subsequent se	f one candidate each (approx. 20						
10-M=VG-	Giovanni	Prodi Lecture :	Selected Topic	s (Master)										
PSin-152-m01	ECTS 10	o Duratio	n 1 seme	ster	Method of grading	numerical grade	Modul level	graduate						
	Courses		V (4) + Ü (2) Module taugh	t in: Englisl	h									
	Method o	f 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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: English creditable for bonus											

10-M=VG-	Giova	anni Prod	i Lecture	Advanc	ed Topics (Master)									
PAin-152-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Cour	ses			- + Ü (2) le taught in: English									
	Meth	od of ass	essment	minut Asses Langu	es) or c) oral examir	nation in groups (grou e semester in which	utes, usually chosen) or ups of 2, 15 minutes per the course is offered and	candidate)	one candidate each (approx. 20 emester					
10-	Giovanni Prodi Lecture Modern Topics (Master)													
M=VGPMin-152-	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
m01	Cour	ses			(4) + Ü (2) odule taught in: English									
	Meth	od of ass	essment	minut Asses 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)  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: English creditable for bonus									
10-M=VGFT-192-	Geometric Complex Analysis													
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Cour	ses		V (4) + Ü (2) Module taught in: German and/or English										
	Meth	od of ass	essment	minut Langu Asses	es) or c) oral examinage of assessment:	nation in groups (grou German and/or Engl	ips of 2, 15 minutes per ish	candidate)	one candidate each (approx. 20 and in the subsequent semester					
10-M=V-	Selec	ted Topic	s in Num	erical a	and Applied Mathem	atics								
NAM-192-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate					
	Cour	ses			+ Ü (2) le taught in: Germar	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 and/or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester creditable for bonus										

10-M=V-	Cryptog	raphy/	Coding T	heory			,				
KRY-192-m01	ECTS	10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Courses	<b>i</b>	•		+ Ü (2) Ile taught in: Germa	n and/or English	•				
	Method	of asse	essment	minut Langu Asses	n) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 ninutes) or c) oral examination in groups (groups of 2, 15 minutes per candidate) anguage of assessment: German and/or English assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester reditable for bonus						
10-M=V-	Comput	er Alge	bra								
CAL-192-m01	ECTS	10	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Courses	V (4) + $\ddot{\text{U}}$ (2) Module taught in: German and/or English									
	Method	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 and/or English  Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester creditable for bonus							
10-M=VAZ-	Algorithmic Number Theory										
T-192-m01	ECTS	10	Duratio	1	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	essment	minut Langu Asses	tes) or c) oral exami	nation in groups (gro : German and/or Eng	oups of 2, 15 minutes peglish	er candidate)	one candidate each (approx. 20 and in the subsequent semester		
10-M=VA-	Algebra	ic Geor	netry								
GE-192-m01	ECTS	10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Courses				+ Ü (2) Ile taught in: Germa	n and/or English					
	Method of assessment			minut Langu Asses	tes) or c) oral exami uage of assessment	nation in groups (gro : German and/or Eng	oups of 2, 15 minutes peglish	er candidate)	one candidate each (approx. 20 and in the subsequent semester		

10-M=SAL-	Semin	ar in Al	gebra									
G-161-m01	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es		S (2) Modu	le taught in: Germa	an and/or English						
	Metho	d of as	sessment	Asses	k (60 to 120 minutes) sessment offered: In the semester in which the course is offered and in the subsequent semester seguage of assessment: German or English							
10-M=SD-	Semin	eminar in Dynamical Systems and Control										
SC-161-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es		S (2) Modu	le taught in: Germ	an and/or English						
	Metho	d of as	sessment	sment talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=S-	Semin	ar in Co	omplex An	alysis	is							
COA-161-m01	ECTS 5 Duration			า	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	Courses			le taught in: Germ	an and/or English			-			
	Metho	Method of assessment			ssment offered: In t		the course is offered a	nd in the subsequent se	emester			
10-M=SAD-	Semin	ar in A	plied Diffe	erentia	l Geometry							
G-161-m01	ECTS	5	Duratio					Modul level	graduate			
	Course	es		S (2) Modu	le taught in: Germa	an and/or English						
	Metho	d of as	sessment									
10-M=S-	Semin	ar in G	eometry ar	d Top	ology			,				
GTO-161-mo1	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es	·	S (2) Modu								
	Method of assessment			talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								

10-M=SGP-	Giovani	ni Prod	i Seminar	(Mast	er)	'						
Cin-152-m01	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	5		S (2) Modu	lle taught in: English	n						
	Method	of ass	essment	Asses	alk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Anguage of assessment: English							
10-M=SID-	Interdis	ciplina	ry Semin	ar								
C-161-m01	ECTS	5	Duratio	on 1 semester Method of grading numerical grade Modul level					graduate			
	Courses	6		S (2) Modu	lle taught in: Germa	n and/or English						
	Method	of ass	essment	Asses	calk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=SM-	Semina	minar Mathematics in the Sciences										
SC-161-mo1	ECTS	5	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (2) Modu	Module taught in: German and/or English							
	Method	of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=SN-	Semina	r in Nu	merical <i>M</i>	Mathematics and Applied Analysis								
MA-161-mo1	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses	5		S (2) Modu	lle taught in: Germa	n and/or English						
	Method	Method of assessment talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							emester			
10-M=SOP-	Semina	r in Op	timizatio	า	,							
T-161-m01	ECTS	5	Duratio									
	Courses	5		S (2) Module taught in: German and/or English								
	Method of assessment			talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								

10-M=S-	Semin	ar in Sta	tistics										
STA-161-m01	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es	•	S (2) Modu	G (2) Module taught in: German and/or English								
	Metho	od of asso	essment	Asses	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=SN-	Semin	ar in Noi	n-linear A	nalysis	5								
LA-161-m01	ECTS	5	Duration	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es		S (2) Modu	) dule taught in: German and/or English								
	Metho	od of asso	essment	Asses	alk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English								
10-M=SA-	Seminar Applied Mathematics												
MA-192-m01	ECTS 5 Duration		Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	es		S (2) Module taught in: German and/or English									
	Method of assessment			talk (approx. 60 to 120 minutes) Language of assessment: German or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent se									
10-M=EL-	Learni	ing by Te	aching 1										
T1-192-m01	ECTS	5	Duration	n	1 semester	Method of grading	(not) successfully completed	Modul level	graduate				
	Courses			Ü (2)	Ü (2)								
	Method of assessment			Assessment of tutoring activities by supervising lecturers or exercise supervisors (1 to 2 teaching units) Language of assessment: German									
				Application and selection with the teaching coordinator for mathematics									

Subfield Physics (r	min. 8 ECT	S cred	its)										
Module Group Gen	eral Theor	ry of Ph	nysics										
11-QM2-161-m01	Quantum	n Mech	anics II										
	ECTS 8	8	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses				/ (4) + R (2) Module taught in: German or English								
11-T00-221-m01	Method (			amina on/ta If a wi form o the le Asses Langu	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 project report (approx. 8 to 10 pages) or 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, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.  Assessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German and/or English								
11-TQO-221-m01	Theoreti					1							
					1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			Modu	V (4) + R (2) Module taught in: German or English								
	Method (	of asse	essment	amina on/ta If a wi form o the le Asses	written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral amination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or present on/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is chathe lecturer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
11-RTT-161-m01	Theory o	f Relat	ivity										
	ECTS 6	6	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses				le taught in: Germar								
	Method (	of asse	essment	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 project report (approx. 8 to 10 pages) or 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English									

11-RMFT-161-m01	Renor	malizati	on Group	Metho	ds in Field Theory			1				
	ECTS	8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cours	es			+ R (2) ıle taught in: Germar	n or English		•				
	Metho	od of ass	essment	oral e prese If a w form the le	written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) ral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) resentation/talk (approx. 30 minutes).  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, we lecturer must inform students about this by four weeks prior to the original examination date at the latest.  Sesessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German and/or English							
11-PKS-161-m01		cs of Cor	nplex Sys	tems								
	ECTS	6	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cours	es			+ R (2) ıle taught in: Germar	n or English						
	Metho	od or ass	essment	amina on/ta If a w form the le	ation in groups (grou Ilk (approx. 30 minut ritten examination w of an oral examinatio ecturer must inform s	es).  as chosen as metho  on of one candidate of  tudents about this b  e semester in which	ninutes per candidate) d of assessment, this meach or an oral examina y four weeks prior to the the course is offered ar	or project report (appro				
11-QIC-201-m01	Advar	ced The	ory of Qua	antum	Computing and Qua	ntum Information						
	ECTS	6	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Cours	es		10,	+ R (1) ıle taught in: Germar	n or English						
	Metho	od of ass	essment	written examination (approx. 90-120 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 project report (approx. 8 to 10 pages) or 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-SLQ-232-m01	Black Holes													
	ECTS	6	Duration	n	1 semester	Method of grading numerical grade	Modul level	graduate						
	Course	S			+ R (1)	on an English								
	Mathae	l of acc	occmont		lle taught in: Germa									
	Method	ı oı ass	essment	b) ora	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									
				c) ora										
					d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes).									
				If a w	ritten examination	was chosen as method of assessment, this ma	ay be changed and ass	sessment may instead take the						
						ion of one candidate each or an oral examinat								
						students about this by four weeks prior to the t: German and/or English	original examination (	date at the latest.						
						he semester in which the course is offered and	d in the following seme	ester						
Module Group The	oretical S	Solid St	tate Physi	cs										
11-TFK-161-m01			lid State	Physic	:s									
		8	Duration		1 semester + R (2)	Method of grading numerical grade	Modul level	graduate						
	Course	S												
	Method	nf ass	essment		le taught in: Germa		f one candidate each (	approx 20 minutes) or oral ex-						
	Method	. 01 uss	essilient	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 project report (approx. 8 to 10 pages) or presentati-										
					on/talk (approx. 30 minutes).  If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the									
					ethod of assessment is changed,									
				the le	cturer must inform	students about this by four weeks prior to the	original examination of	date at the latest.						
				Asses	ssment offered: In t	he semester in which the course is offered and :: German and/or English	d in the subsequent se	mester						
11-TFK2-161-m01	Theore	tical So	olid State			German and/or English		-						
		8	Duration	<u> </u>	1 semester	Method of grading   numerical grade	Modul level	graduate						
	Course			V (4)	+ R (2)			1,0						
					ıle taught in: Germa									
	Method	d of ass	essment	writte	en examination (app	prox. 90 to 120 minutes) or oral examination of	f one candidate each (	approx. 30 minutes) or oral ex-						
				amination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or 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.										
				Asses	ssment offered: In t	he semester in which the course is offered and								
					Language of assessment: German and/or English									

11-PTS-201-m01	Phenor	menolo	gy and Th	eory o	f Superconductivity							
	ECTS	6	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		V (3)	+ R (1) Ile taught in: Germar	or English		`				
	Method	d of acc	accment				or oral examination of one car	ndidate each (ar	pprox. 30 minutes) or oral exami-			
				nation (appr If a w form of the le Langu Asses	nation in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or 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-TEFK-201-m01		gical Ef	fects in S	olid St	ate Physics							
	ECTS	8	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		V (4) Modu	+ R (1) lle taught in: Germar	n or English						
	Method	d of ass	essment	nation (appr If a w form the le Langu	n in groups (groups oox. 30 minutes). ritten examination w							
11-FFK-201-m01	Field Th	heory ir	Solid Sta	ate Phy	/sics			,				
	ECTS	8	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ R (2) Ile taught in: Germar	n or English						
	Method	d of ass	essment	written examination (approx. 90-120 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 project report (approx. 8 to 10 pages) or presentation (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take t form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is char 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-AKTF-201-m01	Selected Topi	cs of Theo	retical	Solid State Physics								
	ECTS 6	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses	·		+ R (1) lle taught in: Germar	n or English							
	Method of ass	essment	nation (approfile a with a wit	tten examination (approx. 90-120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral extion in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or presentation opprox. 30 minutes).  I written examination was chosen as method of assessment, this may be changed and assessment may instead take to most an oral examination of one candidate each or an oral examination in groups. If the method of assessment is charge lecturer must inform students about this by four weeks prior to the original examination date at the latest. In a guage of assessment: German and/or English sessment offered: In the semester in which the course is offered and in the subsequent semester								
11-CMS-161-m01	Computationa	l Materia	ls Scie	cience (DFT)								
	ECTS 8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Courses			(4) + R (2) odule taught in: German or English								
	Method of ass	essment	amina on/ta If a wi form of the le Asses	ation in groups (grou lk (approx. 30 minut ritten examination w of an oral examinatio ecturer must inform s	es).  as chosen as metho  on of one candidate of  tudents about this b  e semester in which	ninutes per candidate) d of assessment, this each or an oral examin y four weeks prior to the the course is offered a	or project report (appro may be changed and ass					
11-KFT-161-m01	Conformal Fie	ld Theory										
	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 ass	essment	amina on/ta If a wi form of the le Asses	ation in groups (grou lk (approx. 30 minut ritten examination w of an oral examinatio ecturer must inform s	es).  as chosen as metho  on of one candidate of  tudents about this b  e semester in which	ninutes per candidate) d of assessment, this each or an oral examin y four weeks prior to the the course is offered a	or project report (appro may be changed and ass	approx. 30 minutes) or oral ex- x. 8 to 10 pages) or presentati- sessment may instead take the ethod of assessment is changed, date at the latest.				

11-KFT2-161-m01	Confor	mal Fie	ld Theory	2	'			-	-			
	ECTS	6	Duratio	1	1 semester	Method of grading	g numerical grade	Modul level	graduate			
	Course	S			+ R (1) ule taught in: Ger	man or English	•					
	Method	d of ass	sessment	amin on/ta If a w form the la Asse	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 project report (approx. 8 to 10 pages) or 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, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German and/or English							
11-TPSM-211-m01	Particle	e Physi	cs (Standa	ard M	odel)							
	ECTS	8	Duratio	1	1 semester	Method of grading	g numerical grade	Modul level	graduate			
	Course	S	·		+ R (2) ule taught in: Ger	man or English	•	•				
	Method of assessment			nation (appose) If a work form the leaning	on in groups (grou rox. 30 minutes). vritten examinatic of an oral examir ecturer must infor uage of assessmi	on was chosen as meth nation of one candidate on students about this ent: German and/or En	nutes per candidate) or od of assessment, this e each or an oral examin by four weeks prior to t glish	project report (approx. 8 may be changed and ass				
	other p			Approval from examination committee required.								
11-CRP-161-m01	Renorn	nalizati	on Group	and C	ritical Phenomen	a						
	ECTS	6	Duratio		1 semester	Method of grading	g numerical grade	Modul level	graduate			
	Course	S		V (3) + R (1) Module taught in: German or English								
	Method	d of ass	essment	written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or amination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or project on/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead 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. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-BWW-161-m01	Bosoni	sation	and Intera	ctions	in One Dimensio	n			-			
	ECTS	6	Duratio	ı	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ R (1) ıle taught in: Gerr	nan or English						
	Method	l of ass	essment	amination/tallf a w form the leads	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 project report (approx. 8 to 10 pages) or 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English							
11-GGD-161-m01	Introdu	ction t	o Gauge/G	aravity	Duality			,				
	ECTS	8	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ R (2) ıle taught in: Gerr	nan or English						
			essment	written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or o amination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or prese on/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead tal 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. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
Module Group Astr	ophysics	5										
11-AKM-161-m01	Cosmol											
	ECTS	6	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course			V (3) + R (1) Module taught in: German or English								
	Method	l of ass	essment	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 project report (approx. 8 to 10 pages) or 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-AST-161-m01	Theore	tical A	strophysic	S			,					
	ECTS	6	Duratio	n	1 semester	Method of grading numerical grade	Modul leve	l graduate				
	Course	S			+ R (2) ule taught in: Gerr	nan or English						
				amin on/ta If a w form the la Asse Lang	ritten 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 project report (approx. 8 to 10 pages) or presentation/talk (approx. 30 minutes).  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 change the lecturer must inform students about this by four weeks prior to the original examination date at the latest.  Seessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German and/or English							
11-EPP-161-m01			o Plasma	_ <u> </u>	cs							
	ECTS	6	Duratio		1 semester	Method of grading   numerical grade	Modul leve	l graduate				
	Course	S			V (2) + R (2) Module taught in: German or English							
	Method	101 ass	sessment	oral oral presonal from the loans and the loans are the lo	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or d) project report (approx. 30 minutes) or d) project report (approx. 8 to 10 papresentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English							
11-APL-161-m01	High E	nergy A	Astrophysi	cs								
	ECTS	6	Duratio	n	1 semester	Method of grading   numerical grade	Modul leve	l graduate				
	Course	S		V (3) + R (1) Module taught in: German or English								
	Method	d of ass	sessment	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 project report (approx. 8 to 10 pages) or 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. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-NMA-161-m01	Comput	tationa	l Astrophy	/sics									
	ECTS	6	Duration	1	1 semester	Method of grading	numerical grade	Modul leve	l graduate				
	Courses	5			V (3) + R (1) Module taught in: German or English								
	Method	l of ass		oral e prese If a wi form of the le Asses	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 change the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
Module Group The	oretical E	Element	tary Partic	le Phy	rsics								
11-QFT1-201-m01			d Theory I										
	ECTS	8	Duration		1 semester	Method of grading	numerical grade	Modul leve	l graduate				
	Courses			Modu	V (4) + R (2)  Module taught in: German or English								
	Method	orass		nation (approference) If a with form of the le Langu	(approx. 30 minutes) or oral exami- a. 8 to 10 pages) or presentation/talk assessment may instead take the emethod of assessment is changed, on date at the latest.								
	other pr	rerequi	sites	Appro	val from examina	ation committee require	d.						
11-QFT2-161-m01			d Theory II										
	ECTS	8	Duration		1 semester	Method of grading	numerical grade	Modul leve	l graduate				
	Courses	5		V (4) + R (2) Module taught in: German or English									
	Method	l of ass		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 project report (approx. 8 to 10 pages) or 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English									

11-TEP-161-m01	Theore	tical Elen	nentary	Partic	e Physics		,					
	ECTS	8	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	S			+ R (2) lle taught in: Germa	n or English	-					
				amina on/ta If a w form the le Asses Langu	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 project report (approx. 8 to 10 pages) or 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German and/or English							
11-ATTP-161-m01	Selecte	d Topics	of Theo	retical	Elementary Particle	e Physics		_				
	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 asses		written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) amination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) on/talk (approx. 30 minutes).  If a written examination was chosen as method of assessment, this may be changed and assessment may insform of an oral examination of one candidate each or an oral examination in groups. If the method of assessment electurer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
11-STRG1-171-mo1	String	Theory 1	,									
	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 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-STRG2-171-m01	String Theory 2											
11 3 11 02 1,1 11 11 11		6	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	S			+ R (1) ale taught in: Germa	, , , ,	<u> </u>	19				
	Method	d of ass	essment	oral e prese If a w form 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.  Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English							
11-BSM-161-mo1	Models	Beyon	d the Sta	ndard	Model of Elementary	y Particle Physics						
	ECTS	6	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	S			V (3) + R (1) Module taught in: German or English							
	Method	1 01 dSS	essment	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 project report (approx. 8 to 10 pages) or 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. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
Module Group Curr	ent Topi	ics										
11-EXMP5-161-mo1	Current	t Topics	of Mathe	matic	al Physics							
	ECTS	5	Duratio	n	1 semester	Method of grading   numerical grade	Modul level	graduate				
	Course				+ R (2)							
	Method	d 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								
	other p	rerequi	sites	Appro	oval from examination	on committee required.						

11-EXMP6-161-m01	Current	Current Topics of Mathematical Physics											
Ì	ECTS	6	Duration	1	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	S	•	V (3)	+ R (1)		-						
	Method	d of ass	essment	oral e prese If a w form 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	rerequi	sites	Appro	oval from examinatio	on committee required.							
11-EXMP7-161-mo1	Current	Topics	of Mathe	matic	al Physics								
	ECTS	7	Duration	1	1 semester	Method of grading   numerical grade	Modul level	graduate					
	Course			1,51	+ R (1)	pprox. 90 to 120 minutes) or b) oral examination o							
				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	rerequi	sites	Approval from examination committee required.									
11-EXMP8-161-mo1			of Mathe	matic	al Physics								
	ECTS	8	Duration		1 semester	Method of grading   numerical grade	Modul level	graduate					
	Course				+ R (2)								
				oral e prese If a w form 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								
	other p	rerequi	sites	Appro	oval from examination	on committee required.							

Subfield Researc	h in Group	s (min	. 10 ECTS (	redits	)							
10-M=GAL-	Resear	ch in G	roups - Al	gebra								
G-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	S			( (2) + S (2)  Module taught in: German and/or English							
	Method	d of ass	sessment	Asse	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=G- DIM-161-m01	Research in Groups - Discrete Mathematics											
	ECTS 10 Duration			n	1 semester	Method of grading numerical grade	Modul level	graduate				
	Course	S	·		+ S (2) ule taught in: Germ	nan and/or English						
	Method	d of ass	sessment	Asse	alk (60 to 120 minutes) ssessment offered: In the semester in which the course is offered and in the subsequent semester anguage of assessment: German or English							
10-M=GD-	Resear	ch in G	roups - Dy	namic	amical Systems and Control Theory							
SC-161-m01	ECTS 10 Duratio		า	1 semester	Method of grading numerical grade	Modul level	graduate					
	Course	S		` '	+ S (2) ıle taught in: Germ	nan and/or English						
	Method	d of ass	sessment	Asse	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=G-	Resear	ch in G	roups - Co	mplex	Analysis		1					
COA-161-m01	ECTS	10	Duratio	<u> </u>	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=GGM-	Resear	ch in G	roups - Ge	omet	y and Topology		,					
T-161-mo1	ECTS	10	Duratio					graduate				
	Course	S		V (2) + S (2) Module taught in: German and/or English								
	Method	d of ass	sessment									

10-M=GM-	Resear	rch in Gr	oups - Ma	athema	atics in Context	'		-				
CX-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es			V (2) + S (2) Module taught in: German and/or English							
	Metho	d of ass	essment	talk (d	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
12 M CM	Danasa	rah in Ca										
10-M=GM- SC-161-m01					atics in the Sciences			Madulland	Laws durate			
36 101 11101	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	25		` '	+ S (2) lle taught in: Germar	n and/or English						
	Method of assessment			Asses	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=G-	Resear	rch in Gr	oups - M	easure	asure and Integral							
MAI-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ S (2) lle taught in: Germar	n and/or English						
	Metho	d of ass	essment	Asses	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=GN-	Research in Groups - Numerical Mathematics and Applied Analysis											
MA-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			V (2) + S (2) Module taught in: German and/or English								
	Method of assessment			talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=GROC-161-	Resear	rch in Gr	oups - Ro	botics	, Optimization and (	Control Theory		1				
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es	•	V (2) + S (2) Module taught in: German and/or English								
	Metho	d of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								

10-M=GT-	Rese	arch in Gr	oups - Tii	me Ser	ies Analysis			'					
SA-161-mo1	ECTS	10	Duratio	n	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English									
10-M=G-	Research in Groups - Statistics												
STA-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses			+ S (2) lle taught in: Germar	n and/or English							
	Meth	od of ass	essment	Asses	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
10-M=GNTH-161-	Rese	arch in Gr	oups - Nu	ımber	nber Theory								
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Cour	ses			+ S (2) Ile taught in: Germar	n and/or English		·					
	Meth	od of ass	essment	Asses	60 to 120 minutes) ssment offered: In th uage of assessment:		the course is offered a	and in the subsequent so	emester				
10-M=GC-	Research in Groups - Control Theory of Quantum Mechanical Systems												
QS-161-m01	ECTS	10	Duratio			Method of grading numerical grade		Modul level	graduate				
	Courses			V (2) + S (2) Module taught in: German and/or English									
	Meth	nod of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English									
10-M=GD-	Rese	arch in Gr	oups - Di	fferent	ial Geometry			'					
GE-161-m01	ECTS	10	Duratio	n	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) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English									

10-M=GDF-	Resear	ch in G	roups - De	forma	tion Quantization			1				
Q-161-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	<u>.</u>		V (2) + S (2) Module taught in: German and/or English							
	Method	d of ass	essment	Asse	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English							
10-M=GN-	Research in Groups - Non-linear Analysis											
LA-161-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S			+ S (2) ıle taught in: Germa	n and/or English		·				
	Method	d of ass	essment	Asse	alk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Anguage of assessment: German or English							
10-M=GO-	Resear	ch in G	roups - O <sub>l</sub>	erato	r Algebras			'				
PA-161-mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses				+ S (2) ıle taught in: Germa	n and/or English		•				
	Method	d of ass	essment	Asse		ne semester in which : German or English	the course is offered a	and in the subsequent se	emester			
10-M=GLIE-192-	Research in Groups - Lie 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 ass	essment	talk (approx. 60 to 120 minutes) Language of assessment: German or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester								
10-M=GAD-	Resear	ch in G	roups - Ap	plied	Differential Geomet	ry						
G-192-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S	<u>,                                      </u>	V (2) + S (2) Module taught in: German and/or English								
	Method	d of ass	essment	Lang	alk (approx. 60 to 120 minutes) Language of assessment: German or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester							

10-M=G-	Resear	rch in Gr	oups - Ma	athema	atical Physics							
MAP-192-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es.			V (2) + S (2)							
					Module taught in: German and/or English							
	Metho	d of ass	essment	talk (approx. 60 to 120 minutes)								
					Language of assessment: German or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester							
10-M=GHST-222-	Resear	rch in Gr	oups - Hi		tructures			,	·			
mo1	ECTS	10	Duratio		1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	!S	<del>'</del>	V (2) - Modu	+ S (2) le taught in: German	and/or English						
	Method of assessment			Asses	Assessment offered: In the semester in which the course is offered and in the subsequent semester  Language of assessment: German or English							
10-M=G-	Resear	rch in Gr	oups - Fu	nction	ctional Analysis							
FAN-222-m01	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	es			+ S (2) le taught in: German	and/or English						
	Metho	d of ass	essment	Asses	So to 120 minutes) sment offered: In the lage of assessment:		the course is offered and in t	he subsequent s	emester			
10-M=GIN-	Research in Groups - Inverse Problems											
P-222-m01	ECTS	10	Duratio			Method of grading	numerical grade	Modul level	graduate			
	Courses			V (2) + S (2) Module taught in: German and/or English								
	Metho	d of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German or English								
11-AG-MDG-161-	Study	Group N	lodern Di	fferent	ial Geometry			,				
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	2S		S (4) Module taught in: German or English								
	Metho	d of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-AG-SPG-161-	Study	Group S	ymplection	and F	oisson Geometry	1		,				
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		S (4) Modu	S (4) Module taught in: German or English							
	Method	d of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
11-AG-OAD-161-	Study	Group C	perator A	lgebra	gebras and Representation Theory							
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Course	S		S (4) Modu	le taught in: Germa	nn or English						
	Method	d of ass	essment	Asses		he semester in which t: German and/or Engl		nd in the subsequent se	emester			
11-AG-HAL-161-	Study	Group H	lopf Algeb	ras		,		'				
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (4) Modu	le taught in: Germa	nn or English						
	Method	d of ass	essment	Asses	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English							
11-AG-KFT-161-m01	Study Group Conformal Field Theory											
	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	graduate			
	Courses			S (4) Module taught in: German or English								
	Method	Method of assessment										emester
11-AG-STM-161-	Study	Group S	Statistical	Mecha	nics							
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	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								

11-AG-QFT-161-mo1	Study	Group C	Quantum F	ield Th	eory							
	ECTS					Method of grading numerical grade	Modul level	graduate				
	Courses			S (4) Module taught in: German or English								
	Method	d of ass	essment	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
11-AG-RGE-161-	Study Group Riemannian Geometry											
m01	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	talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
11-AG-MPH-161- mo1	Study Group Mathematical Physics											
	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 of assessment			talk (60 to 120 minutes) Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English								
Thesis (50 ECTS cro	edits)											
11-FS-MP-161-mo1	Professional Specialization Mathematical Physics											
	ECTS 10		Duratio	n	1 semester	Method of grading (not) successfully comple	eted   Modul level	graduate				
	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								
11-MP-MP-161-m01	Scienti	fic Met	hods and	Project Management Mathematical Physics								
	ECTS 10 Duration			n	1 semester	Method of grading (not) successfully comple	eted Modul level	graduate				
	Course	S		R (6) Module taught in: German or English								
	Method of assessment			talk (60 to 120 minutes) Language of assessment: German and/or English								

11-MA-MP-161-m	1 Maste	Master Thesis Mathematical Physics											
	ECTS	30 Duration		ı	1 semester	Method of grading	numerical grade	Modul level	graduate				
	Course	ourses			No courses assigned to module								
	Metho				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				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	Additional Information			Time to complete: 6 months.								