

Annex SFB

Studienfachbeschreibung (subject description, SFB) for the subject Mathematical Physics as a Bachelor's with 1 major with the degree "Bachelor of Science" (180 ECTS credits)

Responsible: Faculty of Mathematics and Computer Science

Responsible: Institute of Mathematics

Responsible: Faculty of Physics and Astronomy

Examination regulations version: 2020

Examination regulations version: 2020

Examination regulations version: 2020

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

= 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.

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)):

22-Jan-2020 (2020-6)

12-Jun-2024 (2024-74)

??-???-2025 (2025-??)

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	(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 of		l if app	if applicable						
	Other prereq	uisites	if app	icable						
	Participants and allocation of places		ocati- if app	if applicable						
	Additional in	formati	on if app	icable						
	Referred to i	n LPO I	if app	icable (examination r	egulations for teachin	g-degree programmes)				

Compulsory Course	es (104 E	CTS cre	dits)									
Subfield Analysis (25 ECTS	credits)									
10-M-ANP-Ü-202-	Overvi	Overview Analysis for Mathematical Physics										
mo1	ECTS	16	Duratio	n	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (4) -	+ V (4) + Ü (2)							
	Method of assessment			Asses	oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-ANAP1 and 10-M-ANAP2. Language of assessment: German and/or English							
10-M-VAN-202-	Advanc	ed Anal	lysis									
mo1	ECTS	TS 9 Duratio		n	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (4) -	+ Ü (2)							
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
Subfield Linear Alg	ebra (16	ECTS c	redits)									
10-M-LNP-Ü-202-	Overvi	ew Linea	ar Algebra	a for M	athematical Physics							
mo1	ECTS 16 Duration Courses			n	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
				V (4) + V (4) + Ü (2)								
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-LNAP1 and 10-M-LNP-Ü. Language of assessment: German and/or English									

Subfield Classical	Physics (16 EC	TS credits)											
11-E-M-152-m01	Classical Phy	sics 1 (Me	chanic	s)									
	ECTS 8	Duratio	n	1 semester	Method of grading numerical	grade	Modul level	undergraduate					
	Courses			+ Ü (2)			•						
				ıle taught in: Ü: Ger									
	Method of as	sessment		written examination (approx. 120 minutes) Language of assessment: German and/or English									
	other prerequ	uisites	succe	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.									
	Additional In	formation	consi neral the q stude for ar sessr	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.									
	Referred to in	LPO I	§ 53 l § 77 l	Nr. 1 a) Nr. 1 a)									
11-E-E-152-m01	Classical Physics 2 (Heat and Electromagnetism)												
	ECTS 8	Duratio	n										
	Courses		V (4) + $\ddot{\text{U}}$ (2) Module taught in: $\ddot{\text{U}}$: German or English										
	Method of as	sessment	written examination (approx. 120 minutes) Language of assessment: German and/or English										
	other prerequ	uisites	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.										
	Additional In		Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.										
	Referred to in	LPO I	§ 53 l § 77 l	Nr. 1 a) Nr. 1 a)									

11-T-M-152-m01	Theore	etical M	echanics										
-	ECTS	8	Duratio	n	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Course	es			V (4) + Ü (2) Module taught in: Ü: German or English								
	Metho	d of ass	essment	writte	written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other p	prerequi	sites	succe	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.								
	Addition	onal Info	ormation	consi neral the q stude for ar sessr	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.								
11-T-Q-152-m01	Quantum Mechanics												
	ECTS 8 Duratio		n	1 semester	Method of grading numerical grade	Modul level	undergraduate						
	Course	es		V (4) + Ü (2) Module taught in: Ü: German or English									
	Metho	Method of assessment			written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other prerequisites			Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.									
	Addition	onal Info	ormation	consi neral the q stude for ar sessr	dered a declaratio academic and exa ualification for adnents that meet the inassessment or wh	It registers for the exercises and obtains the q n of will to seek admission to assessment pur imination regulations). If the module coordina mission to assessment, they will put the stude respective prerequisites can successfully reginose registration for an assessment was not p akes an assessment to which he/she has not	rsuant to Section 20 Sul stors subsequently find ent's registration for ass ster for an assessment. out into effect will not be	bsection 3 Sentence 4 ASPO (gethat the student has obtained tessment into effect. Only those Students who did not register admitted to the respective as-					

Subfield Statistica	l Physics	and El	ectrodyna	amics (:	16 ECTS credits)						
11-T-SE-152-m01	Statisti	ical Phy	sics and	Electro	dynamics						
	ECTS	6	Duration	n	2 semester	Method of grading numerical grad	de	Modul level	undergraduate		
	Course	S		V (4) +	- V (4)						
	Method	of asso	essment			candidate each (approx. 30 minutes) t: German and/or English					
11-T-SA-152-m01	Statisti	ical Phy	sics - Exe	rcises							
	ECTS 5 Duration			n	1 semester	Method of grading numerical grad	de	Modul level	undergraduate		
	Course	S		Ü (2) Modu	Ü (2) Module taught in: Ü: German or English						
	Method	d of asso	written examination (approx. 120 minutes) Language of assessment: German and/or English								
11-T-EA-152-m01	Electrodynamics - Exercises										
	ECTS 5 Duration		Duration	n	1 semester	Method of grading numerical grad	de	Modul level	undergraduate		
	Courses			Ü (2) Module taught in: Ü: German or English							
	Method	d of asso	essment	written examination (approx. 120 minutes) Language of assessment: German and/or English							
Subfield Laborator	y Course	Physic	s (15 ECT:	S credit	ts)						
11-P-PA-152-m01	Labora	tory Co	urse Phys	ics A (N	Mechanics, Heat,	Electromagnetism)					
	ECTS	3	Duration	n	1 semester	Method of grading (not) successf	ully completed	Modul level	undergraduate		
	Course	S	-	P (2)							
	Method of assessment			practical assignment with talk (approx. 30 minutes) Preparing, performing and evaluating (record of readings or lab report) the experiments will be considered successfully completed if a Testat (exam) is passed. Exactly one experiment that was not successfully completed can be repeated once. After completion of all experiments, talk (with discussion; approx. 30 minutes) to test the candidate's understanding of the physics-related contents of the module. Talks that were not successfully completed can be repeated once. Both components of the assessment have to be successfully completed.							

11-P-FR1-152-m01	Data and Error Analysis												
	ECTS	2	Duration	1	1 semester	Method of grading	(not) successfully	y completed	Modul level	undergraduate			
	Courses	5		V (1) + Ü (1) Module taught in: Ü: German or English									
	Method	of ass	essment		Aritten examination (approx. 120 minutes) anguage of assessment: German and/or English admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who uccessfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students bout the respective details at the beginning of the semester.								
	other pr	rerequi	sites	succe									
				consideral at the questuder for an sessmith not a sessmith to the constant of	egistration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be onsidered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained be qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those udents that meet the respective prerequisites can successfully register for an assessment. Students who did not register an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment ill not be considered.								
	Referred	d to in l			§ 53 Nr. 1 c) § 77 Nr. 1 d)								
11-P-MPB-152-m01													
	ECTS	4	Duration										
	Courses	5		P (2)									
				Prepar pleted compl sics-re the as	practical assignment with talk (approx. 30 minutes) Preparing, performing and evaluating (record of readings or lab report) the experiments will be considered successfully completed if a Testat (exam) is passed. Exactly one experiment that was not successfully completed can be repeated once. After completion of all experiments, talk (with discussion; approx. 30 minutes) to test the candidate's understanding of the physics-related contents of the module. Talks that were not successfully completed can be repeated once. Both components of the assessment have to be successfully completed.								
	other pr					<u> </u>	te modules 11-P-PA	and 11-P-FR1	prior to comple	ting module 11-P-MPB.			
11-P-MPC-152-m01		ory Co	,		r Students of Math	<u>. </u>	_						
	ECTS	4	Duration			Method of grading	(not) successfully	y completed	Modul level	undergraduate			
	Courses			P (2)									
				practical assignment with talk (approx. 30 minutes) Preparing, performing and evaluating (record of readings or lab report) the experiments will be considered successful pleted if a Testat (exam) is passed. Exactly one experiment that was not successfully completed can be repeated one completion of all experiments, talk (with discussion; approx. 30 minutes) to test the candidate's understanding of the sics-related contents of the module. Talks that were not successfully completed can be repeated once. Both comport the assessment have to be successfully completed.									
	other pr	rerequi	sites	Stude	Students are highly recommended to complete module 11-P-MPB prior to completing module 11-P-MPC.								

11-P-FR2-152-m01	Advanc	ed and	Computa	tional	Data Analysis				'			
	ECTS	2	Duratio	n	1 semester	Method of grading (n	ot) successfully completed	Modul level	undergraduate			
	Course	S		V (1) +	- Ü (1)	,						
	Method	of ass	essment				of approx. 10 exercise shee	ts)				
						e a year, summer semes						
	other p					nmended to complete m	odule 11-P-FR1 prior to comp	oleting module	11-P-FR2.			
Compulsory Elective	es Analy	ysis and	d Linear A	lgebra	(10 ECTS credits)							
Subgroup Basics o	f Mather	natical	Methods	(5 ECT:	S credits)							
10-M-ANAP1-202-	Analys	is 1 for	Mathema	tical Pl	nysics							
mo1	ECTS 5 Duratio			1	1 semester	Method of grading (n	ot) successfully completed	Modul level	undergraduate			
	Course	S		Ü (2)								
	Method	d of ass	essment		n examination (app	rox. 90 to 180 minutes)	and written exercises (appro	x. 12 exercise s	sheets with approx. 4 exercises			
				each)	ach) anguage of assessment: German and/or English							
10-M-ANAP2-202-	Analys	is a for	Mathema			- German and/or English		'				
mo1		5	Duratio		1 semester	Mothod of grading (n	ot) successfully completed	Modul level	undergraduate			
	Courses			Ü (2)	1 semester	Method of grading (II	ot) successibility completed	Modulitevel	undergraduate			
					written examination (approx. 90 to 180 minutes) and written exercises (approx. 12 exercise sheets with approx. 4 exercises							
	Method of assessment			each)	each)							
				Language of assessment: German and/or English								
Subfield Linear Alg	ebra (5 l	ECTS cr	edits)									
10-M-LNAP1-202-	Linear	Algebra	a 1 for Mat	hemat	ical Physics							
mo1	ECTS	5	Duratio	1	1 semester	Method of grading (n	ot) successfully completed	Modul level	undergraduate			
	Course	S		Ü (2)								
	Method	d of ass	essment		n examination (app	rox. 90 to 180 minutes)	and written exercises (appro	x. 12 exercise s	sheets with approx. 4 exercises			
				each)	iago of accossment	· Gorman and for English						
10-M-LNAP2-202-	Linear	Language of assessment: German and/or English r Algebra 2 for Mathematical Physics										
mo1		5	Duratio		1 semester	Method of grading (n.	ot) successfully completed	Modul level	undergraduate			
	Course		Duratio	Ü (2)	[1 Semester	metriod or grading (ii	or, successivity completed	modul level	_ andergraduate			
	Method of assessment			written examination (approx. 90 to 180 minutes) and written exercises (approx. 12 exercise sheets with approx. 4 exercises								
	Method of assessment			each)								
					Language of assessment: German and/or English							

Mathematical Meth	nods (18 ECTS ci	redits)										
Subgroup Basics of	f Mathematical	Methods	(5 ECT	S credits)								
10-M-DGE-202-	Introduction to	Differen	tial Ge	al Geometry								
mo1	ECTS 5	Duratio		1 semester	Method of grading	(not) successfully comple	eted Modul level	undergraduate				
	Courses			+ Ü (2)								
	Method of asso		b) ora c) ora Langu Asses credit	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus								
10-M-DGL-202-	Ordinary Differ	rential Eq	uation	S			,					
mo1	ECTS 5	Duration	n	1 semester	Method of grading	(not) successfully comple	eted Modul level	undergraduate				
	Courses		V (4) ·	+ Ü (2)								
			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus									
10-M-FTH-202-m01				1	l	()						
	ECTS 5	Duratio		1 semester	Method of grading	(not) successfully comple	eted Modul level	undergraduate				
	Courses			+ Ü (2)				_				
	Method of asso	essment	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus									
10-M-GAN-202-	Geometric Ana	lysis					·					
mo1	ECTS 5	Duratio		1 semester	Method of grading	(not) successfully comple	eted Modul level	undergraduate				
	Courses		V (4)	+ Ü (2)								
	Method of asso	essment	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus				te)					

10-M-FAN-202-	Introdu	ction to	Function	al Ana	lysis								
mo1	ECTS	5	Duration	n	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate					
	Course	S		V (4) -	+ Ü (2)	· ·							
	Method	d of ass	essment	b) ora c) ora Langu	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
10-M-PAR-202-	Introdu	ction to	Partial D	ifferer	ntial Equations		'						
mo1	ECTS	5	Duration	1	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate					
	Course	S		V (4) -	+ Ü (2)								
				a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus									
Subfield Overview	Mathem	atical N	lethods (:	13 ECTS	S credits)								
10-M-DGGD-	Overview Differential Geometry and Ordinary Differential Equations for Mathematical Physics												
PÜ-152-m01	ECTS	13	Duration	,	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Course	s		V (4) -	+ Ü (2)			_					
	Method	d of ass	essment	Asses select cal Mo	ssment will have refo ted as the subject o ethods) or in modul	andidate each (20 to 40 minutes) erence to two topics in pure mathematics as agreed f one examination in the sub-field Gesamtüberblick e group Ergänzung Mathematik (Supplementary To e German and/or English	Mathematische	Methoden (Overview Mathemati-					
	Overvie	ew Com	plex Anal	ysis an	nd Differential Geom	etry for Mathematical Physics							
mo1	ECTS	13	Duration	1	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Course	S		V (4) -	+ Ü (2)								
	Method	d of ass	essment	Asses select cal Mo	ssment will have refe ted as the subject o ethods) or in modul	andidate each (20 to 40 minutes) erence to two topics in pure mathematics as agreed f one examination in the sub-field Gesamtüberblick e group Ergänzung Mathematik (Supplementary To German and/or English	Mathematische	Methoden (Overview Mathemati-					

10-M-FTGD-PÜ-152-	Overvie	w Com	plex Anal	rsis and Ordinary Differential Equations for Mathematical Physics								
mo1	ECTS	13	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses	S		V (4) + Ü (2)		•						
	Method	of ass	essment	oral examination of one candidate each (20 to 40 minutes)								
				Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be								
				elected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathemati- al Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics).								
				anguage of assessment: German and/or English								
10-M-GADG-	Overview Geometric Analysis and Differential Geometry for Mathematical Physics											
PÜ-152-mo1		13	Duration	<u> </u>	Method of grading numerical grade	Modul level	undergraduate					
	Course	S		V (4) + Ü (2)								
	Method	d of ass	essment	Assessment will have selected as the subjected as the subject cal Methods) or in mo	al examination of one candidate each (20 to 40 minutes) ssessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be elected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematil Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Inguage of assessment: German and/or English							
10-M-GAGD-	Overvie	w Geor	metric Ana	llysis and Ordinary Dif	sis and Ordinary Differential Equations for Mathematical Physics							
PÜ-152-m01	ECTS	13	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses	S		V (4) + Ü (2)								
				selected as the subject cal Methods) or in mo	Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may o selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Matl cal Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English							
_	Overvie	w Geor	metric Ana	llysis and Complex Ana	alysis for Mathematical Physics							
mo1	ECTS	13	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses	S		V (4) + Ü (2)								
	Method of assessment			oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Macal Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English								
10-M-FADG-	Overvie	w Func	tional Ana	alysis and Differential	Geometry for Mathematical Physics							
PÜ-152-mo1	ECTS	13	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses	S		V (4) + Ü (2)								
	Method of assessment			oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematik Mathematics) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English								

10-M-FAGD-	Overvi	Overview Functional Analysis and Ordinary Differential Equations for Mathematical Physics												
PÜ-152-m01	ECTS	13	Duration	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Course	S		V (4) ·	+ Ü (2)									
	Method	d of ass	essment	oral e	xamination of one	candidate each (20 to	40 minutes)							
				Asses	ssment will have re	ference to two topics	in pure mathematics as agr	eed upon with the	examiner. Each topic may only be					
					elected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematial Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics).									
					anguage of assessment: German and/or English									
10-M-FAFT-PÜ-152-	Overview Functional Analysis and Complex Analysis for Mathematical Physics													
mo1	ECTS	13	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Course	S		V (4) ·	+ Ü (2)									
	Method of assessment			Asses select cal M	ral examination of one candidate each (20 to 40 minutes) ssessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be elected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathemati- al Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). anguage of assessment: German and/or English									
10-M-FA-	Overvi	ew Func	tional Ana	alysis	and Geometric Ana	alysis for Mathematic								
GA-PÜ-152-m01	ECTS 13 Duration			1	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Course	S		V (4) ·	+ Ü (2)									
				select	Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English									
10-M-DG-	Overvi	ew Diffe	rential Ge	ometr	y and Partial Diffe	rential Equations for I	Mathematical Physics	'						
PA-PÜ-152-m01	ECTS	13	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Course	S		V (4) ·	+ Ü (2)									
	Method of assessment			oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathem cal Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English										
10-M-GD-	Overvi	ew Ordi	nary Diffe	rential	l Equations and Pa	rtial Differential Equa	tions for Mathematical Phy	sics						
PA-PÜ-152-m01	ECTS	13	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses			V (4) ·	V (4) + Ü (2)									
	Method of assessment			Asses select cal M	ssment will have re ted as the subject ethods) or in modu	ference to two topics of one examination in	in pure mathematics as agr the sub-field Gesamtüberb lathematik (Supplementary	lick Mathematische	examiner. Each topic may only be e Methoden (Overview Mathemati- atics).					

10-M-FTPA-PÜ-152-													
mo1	ECTS	13	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	S	-	V (4) +	· Ü (2)	•		*					
				Assess selected cal Me Langu	oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English								
10-M-GA-	Overview Geometric Analysis and Partial Differential Equations for Mathematical Physics												
PA-PÜ-152-m01	ECTS	13	Duration	n [1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	S		V (4) +	· Ü (2)	•	•	•					
				Assess selected cal Me Langu	ral examination of one candidate each (20 to 40 minutes) ssessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic mathematics as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematis) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Sanguage of assessment: German and/or English								
10-M-FAPA-PÜ-152-	Overvie	ew Funct	tional Ana	alysis a	ınd Partial Diffeı	ential Equations for Ma	thematical Physics						
mo1	ECTS	13	Duration	n [1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	S		V (4) +	· Ü (2)								
	Method of assessment			Assess selected cal Me	sment will have ed as the subjec ethods) or in mo	reference to two topics t of one examination in	in pure mathematics as agre the sub-field Gesamtüberbl lathematik (Supplementary	ick Mathematisch	examiner. Each topic may only be e Methoden (Overview Mathemati- atics).				
Mathematical Phys	ics (18 E	ECTS cre	dits)										
Module Group Supp	plement	ary Topi	ics in Mat	themati	ics								
10-M-NUM1P-152-	Numeri	ical Mat	hematics	1 for M	lathematical Phy	/sics							
mo1	ECTS	10	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	S	•	V (4) + Ü (2)									
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus									

10-M-NUM2P-152-	Numeri	ical Mat	thematics	2 for	Mathematical Phys	sics					
mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul leve	undergraduate		
	Course	S		V (4)	+ Ü (2)	•		•			
	Method	d of ass	essment		a) written examination (approx. 90 to 180 minutes, usually chosen) or						
					o) oral examination of one candidate each (15 to 30 minutes) or						
					oral examination in groups (groups of 2, 10 to 15 minutes per candidate) anguage of assessment: German and/or English						
				credi	reditable for bonus						
10-M-STO1P-152-	Stocha	stics 1	for Mathe	matica	atical Physics						
mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul leve	undergraduate		
	Course	S		V (4)	+ Ü (2)	•	<u>.</u>				
	Method of assessment			b) ora c) ora Langi	written examination (approx. 90 to 180 minutes, usually chosen) or oral examination of one candidate each (15 to 30 minutes) or oral examination in groups (groups of 2, 10 to 15 minutes per candidate) nguage of assessment: German and/or English editable for bonus						
10-M-STO2P-152-	Stocha	stics 2	for Mathe	matic	al Physics	'					
mo1	ECTS 10 Duratio		ı	1 semester	Method of grading	numerical grade	Modul leve	undergraduate			
	Course	S		V (4)	+ Ü (2)						
	Method of assessment			b) ora c) ora Langi	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus						
10-M-ALGP-152-	Introduction to Algebra for Mathematical Physics										
mo1	ECTS	10	Duration	า	1 semester	Method of grading	numerical grade	Modul leve	undergraduate		
	Course	S		V (4)	+ Ü (2)						
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus							
10-M-DIMP-152-	Introdu	iction to	Discrete	Math	ematics for Mather	natical Physics		·			
mo1	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul leve	undergraduate		
	Course	-		V (4) + Ü (2)							
	Method	d of ass	essment	b) ora c) ora Langi	al examination of o Il examination in gr	ne candidate each (1	to 15 minutes per can				

10-M-PGEP-152-	Introdu	ction to	Projectiv	ve Geo	metry for Mathema	tical Physics					
mo1	ECTS	10	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		V (4)	+ Ü (2)	•	•				
	Method	of ass	essment	b) ora	al examination of or	ne candidate each (19					
				Langi Asses	c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus						
10-M-ZTHP-152-	Introdu	ction to	Number	Theor	y for Mathematical	Physics		,			
mo1	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		V (4)	+ Ü (2)	,		· ·			
				b) ora c) ora Langu credit	written examination (approx. 90 to 180 minutes, usually chosen) or oral examination of one candidate each (15 to 30 minutes) or oral examination in groups (groups of 2, 10 to 15 minutes per candidate) nguage of assessment: German and/or English editable for bonus						
10-M-OR-	Operations Research for Mathematical Physics										
SP-152-m01	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course		_	` 1/	+ Ü (2)						
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus					emester		
10-M-DGEP-152-	Introdu	ction to	Differen	tial Ge	ometry for Mathem	atical Physics					
mo1	ECTS	10	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		V (4)	+ Ü (2)						
	Method	l of ass	essment	b) ora Asses lected Meth Langu Asses	a) oral examination of one candidate each (15 to 30 minutes) or b) oral examination in groups of 2 candidates (10 to 15 minutes each) Assessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematica Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus						

10-M-DGLP-152-	Ordinary	/ Differe	ential Eq	uations for Mathematical Physics							
mo1	ECTS :	10	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (4) +	- Ü (2)						
	Method	of asse	ssment	b) oral Assess lected Metho Langu	oral examination of one candidate each (15 to 30 minutes) or oral examination in groups of 2 candidates (10 to 15 minutes each) assessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may only be sected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). anguage of assessment: German and/or English reditable for bonus						
10-M-FT- HP-152-m01	Introduc	tion to	Complex	k Analy:	sis for Mathematic	al Physics		'			
	ECTS :	10	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (4) +	- Ü (2)						
	Method			b) oral Asses lected Metho Langu credita	oral examination of one candidate each (15 to 30 minutes) or oral examination in groups of 2 candidates (10 to 15 minutes each) oral examination in groups of 2 candidates (10 to 15 minutes each) assessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). anguage of assessment: German and/or English reditable for bonus						
10-M-GANP-152- mo1					matical Physics	[a a a b a c a b a c a c a c a c a c a c					
	ECTS 10 Duratio				1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Method of assessment			b) oral Assess lected Metho Langu	a) oral examination of one candidate each (15 to 30 minutes) or b) oral examination in groups of 2 candidates (10 to 15 minutes each) Assessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may lected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview N Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English creditable for bonus						
10-M-FANP-152-	Introduc	tion to	Function	ial Anal	lysis for Mathemati	cal Physics					
mo1	ECTS 2	10	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (4) +	- Ü (2)	•		•	•		
	Method of assessment			b) oral Assess lected Metho Langu	oral examination of one candidate each (15 to 30 minutes) or oral examination in groups of 2 candidates (10 to 15 minutes each) sessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may only be sected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical ethods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Inguage of assessment: German and/or English editable for bonus						

Introduction to Partial Differential Equations for Mathematical Physics ECTS 10 Duration 1 semester Method of grading numerical grade Modul level undergraduate											
Assessment will have reference to a topic in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics). Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester											
b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate)											
Language of assessment: German and/or English											
V (4) + Ü (2)											
Module taught in: Ü: German or English written examination (approx. 120 minutes)											
1 semester Method of grading numerical grade Modul level undergraduate V (4) + Ü (2)											
Module taught in: Ü: German or English											
written examination (approx. 120 minutes)											
Language of assessment: German and/or English Ite Physics											
V (4) + Ü (2) Module taught in: Ü: German or English											
written examination (approx. 120 minutes)											
Language of assessment: German and/or English											

11-E-T-152-m01	Nuclear and El	ementary F	Particle Physics									
	ECTS 6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses		V (3) + Ü (1) Module taught in: Ü: German or English									
	Method of ass		written examination (approx. 120 minutes) Language of assessment: German and/or English									
Module Group Sup	plementary Top	ics in Phys	ics									
11-RRF-202-m01	Introduction to Relativistic Physics and Classical Field Theory											
	ECTS 6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses		V (3) + R (1) Module taught in: Germa	n or English								
	Method of asso	1 C C C C C C C C C C	a) written examination (ab) oral examination of on c) oral examination in groud) project report (approx.e) presentation/talk (applif a written examination voluments of an oral examination the lecturer must inform thanguage of assessment Assessment offered: Onc	ne candidate each (appoups (groups of 2, appoups) or 10 pages) or 10 prox. 30 minutes). It was chosen as methor on of one candidate of students about this be: German and/or Engioners	prox. 30 minutes) or prox. 30 minutes per can d of assessment, this mate ach or an oral examinat y four weeks prior to the lish	ay be changed and assion in groups. If the m	sessment may instead take the ethod of assessment is changed, date at the latest.					
11-QUI-202-m01	Introduction to Quantum Computing and Quantum Information											
	ECTS 6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses		V (3) + R (1) Module taught in: German or English									
	Method of asso	1 C C C I f t	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-GRT-152-m01	Group '	Theory				,					
	ECTS	6	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Course	S		V (2) -				,			
					Module taught in: German or English a) written examination (approx. 90 to 120 minutes) or						
	Method	a or asse		b) ora c) ora d) pro e) pre	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 the le	of an oral examinat cturer must inform	tion of one candidate (each or an oral examination in good or an oral examination in good or good or an oral examination in good or a	groups. If the m	ethod of assessment is changed,		
11-QFT1B-202-m01	Quantu	ım Field	Theory I								
	ECTS	8	Duration	1	1 semester	Method of grading	numerical grade	Modul level	graduate		
	Course				le taught in: Germa						
				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 assessr form of an oral examination of one candidate each or an oral examination in groups. If the metho the lecturer must inform students about this by four weeks prior to the original examination date Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semes					ethod of assessment is changed, date at the latest.		
11-CP-152-m01			Physics		r	1		1	r		
		6	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (3) + R (1) Module taught in: German or English							
	Method	d of asso		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: Once a year, winter semester							

11-SDC-152-m01	Statistic	s, Data Ana	lysis and	Computer Physics						
	ECTS	4 Dui	ation	1 semester	Method of grading numerical grade	Modul level	graduate			
	Courses			V (2) + R (1) Module taught in: German or English						
	Method	of assessm	b) or c) or d) pr e) pr If a w form the l 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: Once a year, winter semester						
11-AP-152-m01	Astrophysics									
	ECTS 6 Duration			1 semester	Method of grading numerical grade	Modul level	undergraduate			
	Courses			V (2) + R (2) Module taught in: German or English						
	Method	of assessm	b) or c) or d) pr e) pr If a w form the l	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						
	Referred to in LPO I			§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)						

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 Theory of Relativity ECTS 6 Duration I semester Method of grading numerical grade Modul level undergraduate Course* V(3) + R(1) Module taught in: German or English Method of assessment a a) written examination (approx. 90 to 120 minutes) or b) oral examination in groups (groups of 2, approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination of one candidate each or an oral examination in groups. If the method of assessment the latest. Language of assessment. German and/or English Additional Information Approval from examination committee required Module Group Current Topics in Mathematical Physics ECTS 5 Duration 1 semester Method of grading numerical grade Modul level undergraduate Courses V(2) + R(2) Method of assessment is 8 to 10 pages) or e) or all examination in groups. Si to 10 pages or e) presentation/talk (approx. 30 minutes) or b) oral examination in groups (groups of 2, approx. 30 minutes) or b) oral examination in groups (groups of 2, approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) or e) presentation/talk (approx. 30 minutes) or e) presentation/talk (approx. 30 minutes) or e) presentation/talk (approx. 30 minutes) or e) presentation (appro	11-TPS-152-m01	Particl	e Physi	cs (Standa	ard Mo	odel)							
Method of assessment Module taught in: German or English		ECTS	8	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) or d) project report (approx. 8 to 10 pages) or e) presentation (ratk (approx. 30 minutes)). If a written examination was chosen as method of assessment, this may be changed and 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 1-RTIB-232-mo1 Theory of Relativity ECTS 6 Duration I semester Method of grading numerical grade Modul level undergraduate Courses V(3) + R (1) Method of assessment: A with a semination (approx. 90 to 120 minutes) or c) oral examination of one candidate each (approx. 30 minutes) or c) oral examination of one candidate each or an oral examination in groups. If the method of 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 may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of 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 of the 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 of the 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 is changed the lecturer must inform students and lore from the prior or or language of assessment (approx. 30 minutes) or or oral examination or one candidat		Course	2S										
ECTS 6 Duration 1 semester Method of grading numerical grade Modul level undergraduate		Metho	d of ass	sessment	b) or c) or d) pr e) pr If a w form the le	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.							
Courses V (3) + R (1) Module taught in: German or English Method of assessment all written examination (approx. 9o to 12o minutes) or b) oral examination in groups (groups of 2, approx. 3o minutes) or c) oral examination in groups (groups of 2, approx. 3o minutes) or e) presentation/talk (approx. 8 to 10 pages) or e) presentation/talk (approx. 3o 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 Additional Information Approval from examination committee required Additional Information Insormatical Physics 1-BXMP5-152-mot Current Topics in Mathematical Physics Courses V(2) + R (2) Method of assessment Insormation Insormation Insormation (approx. 90 to 120 minutes) or b) oral examination in groups (groups of 2, approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination of one candidate each (approx. 30 minutes) or e) presentation/talk (approx. 30 minutes) If a written 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	11-RTTB-232-m01	Theory	of Rela	ativity									
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) or c) oral examination in groups (groups of 2, approx. 30 minutes) ere candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination of one candidate each or an oral examination in groups. If the method of 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 offered: In the semester in which the course is offered and in the subsequent semester. **Module Group Current Topics in Mathematical Physics** 1-BXMP5-152-mot Current Topics in Mathematical Physics** ECTS Durator 1 semester Method of grading numerical grade Modul level undergraduate **Courses** V(2) + R(2) **Method of assessment** Method of assessment** A written examination (approx. 90 to 120 minutes) or b) oral examination in groups (groups of 2, approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). ff 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		ECTS 6 Duration					Method of grading	numerical grade	Modul level	undergraduate			
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 of one candidate each or an oral examination in groups. If the method of 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 Module Group Current Topics in Mathematical Physics 1-BXMP5-152-mo1 Current Topics in Mathematical Physics ECTS 5 Duration 1 semester Method of grading numerical grade Modul level undergraduate Courses V(2) + R(2) 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) or c) oral examination in groups (groups of 2, approx. 30 minutes) 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		Course	es				an or English						
Andule Group Current Topics in Mathematical Physics 1-BXMP5-152-mo1 Current Topics in Mathematical Physics					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 th 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. Language of assessment: German and/or English								
1-BXMP5-152-mo1 Current Topics in Mathematical Physics ECTS 5 Duration 1 semester Method of grading numerical grade Modul level undergraduate													
ECTS 5 Duration 1 semester Method of grading numerical grade Modul level undergraduate Courses V (2) + R (2) 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	Module Group Curr	ent Top	ics in M	lathematic	cal Ph	ysics							
Courses V (2) + R (2) 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	11-BXMP5-152-mo1		t Topics	s in Mathe	matic	al Physics							
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				Duration			Method of grading	numerical grade	Modul level	undergraduate			
other prerequisites Approval from examination committee required.		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.								
Bachelor's with 1 major Mathematical Physics (2020) MU Würzburg • generated 22-Okt-2025 • exam. reg. data record 82 b55 - - H 2020 page 21 / 27	Bachelor's with 1 major N												

11-BXMP6-152-	Current Top	pics in Mathe	matical Physic	s						
mo1	ECTS 6	Duration	1 seme	ster	Method of grading numerical grad	de	Modul level	undergraduate		
	Courses	,	V (3) + R (1)		· ·	•				
	Method of	assessment			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							
						s 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 ora	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							
DVMDG	other prere	<u> </u>			on committee required.					
11-BXMP8-152- mo1			matical Physic		Mathada fawadiya layya wigalaya	J - [Ma dulland	Lundanese du ete		
11101	ECTS 8	Duration		ster	Method of grading numerical grad	ie	Modul level	undergraduate		
	Courses		V (4) + R (2)							
	Method of	assessment	a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or							
					oups (groups of 2, approx. 30 minute		or			
			d) project rep	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 prere	quisites	Approval from examination committee required.							
Key Skills Area (20	ECTS credit	s)								
General Key Skills	5 ECTS cred	lits)								
In addition to the m	odules liste	ed below, stud	dents may also	take modu	ules offered by JMU as part of the poo	l of general trans	ferable skills ((ASQ).		
General Key Skills	(subject-spe	ecific)								
10-M-Tu-	Exercise tu	tor or proof-r	eading in Math	nematics						
Ko-152-mo1	ECTS 5	Duration					undergraduate			
	Courses		T (o)	T (o)						
	Method of	assessment	Assessment of tutoring activities or correcting work by supervising lecturers or exercise supervisors (1 to 2 teaching units or							
			approx. 5 pieces of correcting work)							
			Please direct application to teaching coordinator Mathematics, he/she will select participants.							
	Referred to	in LPO I	§ 22 II Nr. 3 f)							

10-M-VHB1-152-	E-Learn	ning an	d Blended	Learn	ing Mathematics 1						
mo1	ECTS	2	Duratio	n	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	S		Ü (2) Cours	Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)						
	Method	d of ass	essment		project (web-based, 15 to 20 hours)						
		a 0. 000			Assessment offered: Once a year, winter semester						
10-M-VHB2-152-	E-Learn	ning an	d Blended	Learn	Learning Mathematics 2						
mo1	ECTS 2 Duration				1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Courses			Ü (2) Cours	se type: eLearning, n	nostly Virtuelle Hochschule Bayern (vhb)					
	Method	d of ass	sessment		ct (web-based, 15 to ssment offered: Onc	20 hours) e a year, summer semester					
11-P-VKM-202-m01	MINT P	reparat	tory Cours	e Mat	nematical Methods	of Physics					
	ECTS	3	Duratio	n	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	S		V (1) + Ü (2) Module taught in: German or English							
	Method	d of ass	sessment	a) exercises (successful completion of approx. 50% of approx. 6 exercise sheets) or b) talk (approx. 15 minutes) Assessment offered: Once a year, winter semester							
	Referre	d to in	LPO I	§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)							
11-EGR-252-m01	Introduction to Intellectual Property Rights										
	ECTS	3	Duratio	n	1 semester	Method of grading (not) successfully completed	Modul level				
	Course	S		V (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							

Subject-specific Ke	y Skills	(15 ECT	S credits)							
Subject-specific Ke	y Skills,	, Compu	lsory Cou	ırses (ECTS credits)					
10-M-GBM-152-	Basic N	lotions	and Meth	ods of Mathematical Reasoning						
mo1	ECTS	2	Duratio	n 1 semester		Method of grading	(not) successfully completed	Modul level	undergraduate	
	Course	S		V (1) +	/ (1) + Ü (1)					
	Method of assessment				project (10 to 15 pages) Language of assessment: German and/or English					
	Additio	nal Info	rmation	Addit	ional information on	module duration: blo	ock taught prior to the beginni	ng of the lecture	e period.	
	Referre	d to in L	-PO I		§ 22 Nr. 1 h) § 22 Nr. 2 f)					
10-M-ASM-152-	Reason	ning and	Writing	in Mat	hematics					
mo1	ECTS	2	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate	
	Course	S		V (1) +	- Ü (1)	•				
	Method of assessment					German and/or Engli	sh			
11-SMP-162-m01	Semina	ar Math	ematical	Physic	hysics					
	ECTS	5	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate	
	Courses			S (2) Module taught in: German or English						
	Method	d of asso	essment	talk (60 to 120 minutes) Language of assessment: German and/or English						
Subject-specific Ke	y Skills,	, Compu	lsory Ele	ctives	(6 ECTS credits)					
10-M-SEM2-152-	Supple	mentar	y Semina	r Mathematics						
mo1	ECTS 4 Duratio		n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Course	S		S (2)						
				talk (60 to 120 minutes) Language of assessment: German and/or English						

11-HS-152-m01	Semina	r Exper	imental/1	Theore	tical Physics	,					
	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses	5		S (2) Modu	le taught in: Germa	nn or English					
	Method	of asse	essment	talk w	ith discussion (30	to 45 minutes)					
	other pr	erequi	sites	Admis	Admission prerequisite to assessment: regular attendance (minimum 85% of sessions).						
10-M-TOP-152-m01	Addition	nal Info	rmation	consineral the quality stude for an sessn	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.						
	Introduc	ction to	Topolog	y							
	ECTS 5 Duratio			1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses	;	•	V (2) -	/ (2) + Ü (2)						
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus							
10-M-COM-152-	Comput	ational	Mathem								
mo1	ECTS	4	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses	;		V (1) +	- Ü (2)						
	Method of assessm			project in the form of programming exercises (approx. 20 to 25 hours) Language of assessment: German and/or English Assessment offered: Once a year, winter semester							
	Referred	d to in L	PO I	§ 22 l	Nr. 3 f)						
10-M-PRG-152-m01	Program	nming	course fo	r stude	nts of Mathematics	s and other subjects					
	ECTS	3	Duration	1	·						
	Courses			P (2)							
	Method of assessment			project in the form of programming exercises (approx. 20 to 25 hours) Language of assessment: German and/or English Assessment offered: Once a year, summer semester							
	Referred	to in L	PO I	§ 22 II Nr. 3 f)							

10-M-GES-152-m01	Selected Topics in History of Mathematics												
	ECTS 5 Duration			1	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Courses	5		V (2) + Ü (2)									
	Method	l of asse	ssment	a) talk (45 to 90 minutes) or									
				b) term paper (10 to 15 pages) or									
				c) project work (15 to 25 hours) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
	Referred	d to in L	PO I	§ 22 Nr. 3 f)									
10-M-MSC-152- mo1	Mathen	natical \	Writing										
	ECTS 5 Duratio			ı	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Courses	5		V (2) + Ü (2)									
	Method	l of asse	ssment	a) talk (45 to 90 minutes) or									
				b) term paper (10 to 15 pages) or									
				c) project work (15 to 25 hours) Language of assessment: German and/or English Assessment offered: In the semester in which the course is offered and in the subsequent semester									
	Referred	d to in I	PO I	§ 22 II Nr. 3 f)									
10-M-SCH-152-m01			-	om a Higher Perspective									
10 M 3CH 132 MO1		5	Duration		1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Courses				+ Ü (2)	Mictilod of glading (not) successibility completed	Modulitevel	undergraduate				
				a) talk (approx. 45 minutes) or									
	Methou	1 01 0336	:331110111	b) term paper (10 to 15 pages) or									
				c) project work (15 to 25 hours)									
				Language of assessment: German and/or English									
				Assessment offered: In the semester in which the course is offered and in the subsequent semester									
	Referred	d to in L	PO I	§ 22 Nr. 1 h)									
				§ 22 II Nr. 2 f) § 22 II Nr. 3 f)									
10-M-PRO-152-m01	Prosem	inar Ma	thematic										
10 1 10 1 12 11101	ECTS 4 Duration				1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Courses			S (2)									
				talk (60 to 120 minutes)									
				Language of assessment: German and/or English									
				Assessment offered: In the semester in which the course is offered									

11-M-MR-202-m01	Mathematical Methods of Physics											
	ECTS 6 Duration		ı	2 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Course	S		V (2) + Ü (2) + V (2) + Ü (2) Module taught in: German or English								
	Method	d of ass	essment	a) Exercises (successful completion of approx. 50% of approx. 13 exercise sheets) or b) Talk (approx. 15 minutes)								
	Referred to in LPO I			§ 53 Nr. 1 a) § 77 Nr. 1 a)								
11-CP-152-m01	Computational Physics											
	ECTS 6 Duration		ı	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses			V (3) + R (1) 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: Once a year, winter semester								
Thesis (10 ECTS cre				- 4								
10-M-BAP-152-m01												
	ECTS 10 Duration				1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			No courses assigned to module								
	Method of assessment			written thesis (approx. 250 to 300 hours total)								
	other prerequisites			Where applicable, topic-specific modules as specified by supervisor.								
	Additional Information			Time to complete: 10 weeks.								