

# Module Catalogue

for the Subject

## Mathematics

as a Bachelor's with 1 major with the degree "Bachelor of Science" (180 ECTS credits)

> Examination regulations version: 2014 Responsible: Institute of Mathematics

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record 82|105|-|-|H|2014

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#### The subject is divided into

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#### **Content and Objectives of the Programme**

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The mathematics Bachelor programme is offered by the Department of Mathematics, with a total of currently (SS 2010) 9 chairs.

At the end of this course of study, the student should be familiar with the main branches of mathematics, taught methods of mathematical reasoning and working as well as analytical thinking, abstract concepts and the ability to recognize and construct complex structures and interconnections.

Through the course these skills which the students acquire provide the basic knowledge required for a consecutive Bachelor-Masters degree. Moreover, they can later familiarize themselves with the many areas of society which mathematical methods can be applied to or be of use. This is supported through the study of an integrated elective application-oriented subject (biology, chemistry, geography, computer science, philosophy, physics or economics) in which the students' choice is trusted to utilize the basic ideas and technical skills of the subject where mathematical methods apply.

In the mathematics Bachelor study, the main emphasis is put on basic mathematical knowledge, method knowledge and the development of the mental constructs which are typical for mathematics. The acquisition of special topics in different secondary branches of mathematics is subordinate.

For the Bachelor thesis the student should work on a thematic and temporally closely limited frame in order to carry out a mathematical task, using well-known procedures and scientific criteria under guidance but, to a large extent, independently.

The exam enables the acquisition of a comparable, international degree in the field of mathematics and provides the framework of a consecutive Bachelor-Masters degree as an initial professional qualification which can be used as a mean for entry into the working world or as preparation for further Masters study. The exam should ascertain whether the candidate overlooks the context of the basics in mathematics and possesses the ability to use the corresponding scientific methods, with regards to mathematics and the selected elective application-oriented subjects.

#### Abbreviations used

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

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

#### Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method 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 the 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:

#### ASP02009

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

#### 24-Mar-2014 (2014-4)

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.



#### **Compulsory Courses**

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## **Compulsory Courses Analysis**

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	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title			Abbreviation		
Fundamentals Analysis				10-M-ANA-G-131-m01	
Module coordinator M				Module offered by	
Dean o	fStudi	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
8	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		and completeness, basic al and integral calculus i		, convergence and d	ivergence of sequences and se-
Intend	ed lear	ning outcomes			
central	proof r	nethods in analysis and o	can employ them to s	olve easy problems.	He/She is acquainted with the He/she is able to perform easy s precisely and clearly in written
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (I	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		nation (approx. 90 to 180 ssessment: German, Eng			with approx. 4 exercises each
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	Bachelor' degree (1 major) Mathematics (2014)				
Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title			Abbreviation		
Overview Analysis			10-M-ANA-Ü-131-m01		
Module	coord	inator		Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
12	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
ries, dif	ferenti		n one variable, furthe		ivergence of sequences and se- erations, differential calculus
Intende	ed leari	ning outcomes			
them in	depen ckgrou	dently, He/She has an ov nd and geometric interpr	verview over the fund	amental notions and	analysis and is able to apply d concepts of analysis, their ana- express them adequately in writ-
Courses	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (n	io infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
module	s 10-M	ion of one candidate eacl -ANA-G and 10-M-ANA-Ü. ssessment: German, Eng			nave reference to the contents of
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelo	Bachelor' degree (1 major) Mathematics (2014)				
Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title				Abbreviation	
Advanced Analysis 10-M-VAN-131-m01					10-M-VAN-131-m01
Module coordinator Module offe			Module offered by		
Dean o	f Studio	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
9	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Continu	uation	of analysis in several vari	ables, integration the	eorems.	
Intende	ed leari	ning outcomes			
		acquainted with advanc understand the construct			of the Lesbegue integral, he or
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)
module is	s creditab	le for bonus)			t every semester, information on whether
written oral exa	examiı aminati		y an oral examination 2, approx. 30 minutes	of one candidate ea ;)	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Workload					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
	Bachelor' degree (1 major) Mathematics (2014)				
Bachelor' degree (1 major) Computational Mathematics (2014)					



## Compulsory Courses Linear Algebra

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	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	Module title Abbreviation								
Fundar	Fundamentals Linear Algebra 10-M-LNA-G-131-m01								
Module coordinator Module offered			Module offered by						
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	atics				
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)					
8	(not) s	successfully completed							
Duratio	on	Module level	Other prerequisites						
1 seme	ster	undergraduate							
Conten	ts								
Basic n termina		and structures; vector sp	baces, linear maps, sy	stems of linear equa	ations; theory of matrices and de-				
Intend	ed lear	ning outcomes							
ted wit	h the c	entral proof methods in li	inear algebra and car	n apply them to solve	ear algebra. He/She is acquain- e easy problems. He/She is able m adequately in written form.				
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)					
1) Ü + V	no infoi	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)				
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether				
		nation (approx. 90 to 180 ssessment: German, Eng		x. 12 exercise sheets	with approx. 4 exercises each				
Allocat			<u>.</u>						
Additio	onal inf	ormation							
Worklo	ad								
Teaching cycle									
Referred to in LPO I (examination regulations for teaching-degree programmes)									
Module appears in									
Bachelor' degree (1 major) Mathematics (2014)									
Bachel	or' deg	ree (1 maior) Computatio	nal Mathematics (20)	Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title			Abbreviation		
Overview Linear Algebra				10-M-LNA-Ü-131-m01	
Module coordinator				Module offered by	
Dean of	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
12	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
	inants;	eigenvalue theory; biline			equations; theory of matrices and baces; diagonalisability and Jor-
Intende	ed learı	ning outcomes			
ply thei knows	m inde about t	pendently. He/She has a	n overview over the fi etric background, is a	undamental notions	linear algebra and is able to ap- and methods of linear algebra, b each other and can present
Course	<b>S</b> (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>eessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
module	es 10-M	ion of one candidate eacl I-ANA-G and 10-M-ANA-Ü. ssessment: German, Eng		s); assessment will ŀ	nave reference to the contents of
Allocat					
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
		ree (1 major) Mathematic			
Bachelor' degree (1 major) Computational Mathematics (2014)					



## **Compulsory Courses Applied Mathematics**

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 16 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title			Abbreviation		
Fundamentals Applied Mathematics				10-M-ANW-G-131-m01	
Module coordinator				Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Numeri ons and tegratic Numeri itial val Stochas tion the sures a ted valu	cal Ma d syste on) cal Ma ue prol stics 1 cory, co nd stoo ue and stics 2	ms of equations, interpol thematics 2 (Solution me olems for ordinary differe (Combinatorics, Laplace Intinuous distributions: r chastic independence, el variance, limit theorems: (Elements of data analys	systems of linear equ ation with polynomia ethods and application ntial equations, boun models, selected dis normal distribution, ra ementary conditional law of large number	als, splines and trigo ons for eigenvalue pr ndary value problem crete distributions, e andom variable, dist l probability, charact s, central limit theor	elementary measure and integra- ribution function, product mea- ceristics of distributions: expec-
Intende	ed learr	ning outcomes			
He/She	is acq		concepts and algorith	nms in this field, can	field in applied mathematics. apply them independently and
Course	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	io infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		e <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written oral exa	examir aminati		/ an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelo	or' deg	ree (1 major) Mathematic	s (2014)		

Module	title				Abbreviation
Overview Applied Mathematics				10-M-ANW-Ü-131-m01	
Module	e coord	inator		Module offered by	
Dean of	f Studio	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
12		rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme		undergraduate			
Conten					
Numeri ons and tegratic Numeri itial val Stocha ted valu Stocha variate Intende	Two of the following topics in applied mathematics: <b>Numerical Mathematics 1</b> (Solution of systems of linear equations and curve fitting problems, nonlinear equations and systems of equations, interpolation with polynomials, splines and trigonometric functions, numerical integration) <b>Numerical Mathematics 2</b> (Solution methods and applications for eigenvalue problems, linear programming, initial value problems for ordinary differential equations, boundary value problems) <b>Stochastics 1</b> (Combinatorics, Laplace models, selected discrete distributions, elementary measure and integration theory, continuous distributions: normal distribution, random variable, distribution function, product measures and stochastic independence, elementary conditional probability, characteristics of distributions: expected value and variance, limit theorems: law of large numbers, central limit theorem) <b>Stochastics 2</b> (Elements of data analysis, statistics of data in normal and other distributions, elements of multivariate statistics) <b>Intended learning outcomes</b>				
knows	about t	he possibilities and limit	ations of their applic	ability.	apply them independently and
		umber of weekly contact hours, l			
		mation on SWS (weekly o	-		· · · · · · · · · · · · · · · · · · ·
		le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
dealt w candida	ith in n ate		ell as an additional s		nave reference to the sub-field nathematics as selected by the
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module					
Bachel	or' deg	ree (1 major) Mathematic	s (2014)		



#### **Compulsory Courses Pure Mathematics**

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	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title			Abbreviation			
Fundamentals Pure Mathematics       10-M-REI-G-131-m01						
Module coordinator			Module offered by			
Dean o	f Studi	es Mathematik (Mather	matics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
8	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Conten	ts					
One of	the fol	lowing topics in pure m	athematics:			
<b>Introdu</b> tion, su	<b>iction t</b> ibmani	o Algebra (Fundamenta o Differential Geometry folds in Euclidean spac theorem on local surfa	(Curves in Euclidean es, hypersurfaces in p	spaces, curvature, Fr articular, curvature c	enet equations, loca	
<b>Ordina</b> itial val	<b>ry Diffe</b> lues, sy	erential Equations (Exis stems of linear different	tence and uniqueness	theorem; continuou		
tegrals theorer <b>Geome</b> ke's the <b>Introdu</b>	and Ca and Ca m and a tric An eorem uction t	o Complex Analysis (Co auchy integral theorems applications, Weierstra alysis (Fundamentals in and applications in vec o Projective Geometry amental theorems for p	s, isolated singularities B product theorem and n analysis on manifold tor analysis and topolo (Projective and affine p	s, meromorphic funct theorem of Mittag-L s, submanifolds, cal ogy) planes, projective an	tions and Laurent se effler, conformal ma culus of differential f d affine spaces, theo	ries, residue (ps) forms, Sto- orem of De-
		ning outcomes		ities and polarities o	i projective spaces).	
The stu	ident k e is acq	nows and masters the equation of the second se				
		number of weekly contact hours	, language — if other than Ge	rman)		
1) Ü + V	no info	rmation on SWS (weekl	y contact hours) and co	ourse language avail	able)	
		S <b>essment</b> (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
written oral exa	exami aminat	nation (approx. 90 to 18 nation can be replaced ion in groups (groups o ssessment: German, El	by an oral examination f 2, approx. 30 minute	n of one candidate ea		
Allocat	ion of <sub>l</sub>	places				
Additio	onal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
Bachelor's	with 1 ma	jor Mathematics (2014)	-	; • generated 26-Aug-2024 • G achelor (180 ECTS) Mathema	-	page 20 / 191

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 21 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title			Abbreviation			
Overvi	Overview Pure Mathematics 10-M-REI-Ü-131-m01					
Module coordinator		Module offered by				
Dean o	fStudie	es Mathematik (Mathen	natics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
12	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Conten	Its					
Introdu Introdu tion, su metries Ordina itial va higher Introdu tegrals theored Ke's th Introdu sargue Intendu The stu	Two of the following topics in pure mathematics: Introduction to Algebra (Fundamental algebraic structures: groups, rings, fields; Galois theory) Introduction to Differential Geometry (Curves in Euclidean spaces, curvature, Frenet equations, local classifica- tion, submanifolds in Euclidean spaces, hypersurfaces in particular, curvature of hypersurfaces, geodesics, iso- metries, main theorem on local surface theory, special classes of surfaces) Ordinary Differential Equations (Existence and uniqueness theorem; continuous dependence of solutions on in- itial values, systems of linear differential equations, matrix exponential series, linear differential equations of higher order) Introduction to Complex Analysis (Complex differentiability and Cauchy-Riemann differential equations, path in- tegrals and Cauchy integral theorems, isolated singularities, meromorphic functions and Laurent series, residue theorem and applications, Weierstraß product theorem and theorem of Mittag-Leffler, conformal maps) Geometric Analysis (Fundamentals in analysis on manifolds, submanifolds, calculus of differential forms, Sto- ke's theorem and applications in vector analysis and topology) Introduction to Projective Geometry (Projective and affine planes, projective and affine spaces, theorem of De- sargues, fundamental theorems for projective spaces, dualities and polarities of projective spaces). Intended learning outcomes The student knows and masters the essential methods and basic notions in two branches of pure mathematics. He/She has an overivew over the central concepts and proof methods in these fields, and is able to present their					
Course	<b>S</b> (type, n	umber of weekly contact hours	, language — if other than Ge	rman)		
V + Ü (I	no infor	mation on SWS (weekly	r contact hours) and co	ourse language avail	able)	
		<b>eessment</b> (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether
dealt w date	/ith in n	ion of one candidate ea 10dule 10-M-REI-G as w ssessment: German, Er	ell as an additional su			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
-						
Module	e appea	ars in				
Bachelor's	with 1 maj	or Mathematics (2014)	-	• generated 26-Aug-2024 • e	-	page 22 / 191
			uata record B	achelor (180 ECTS) Mathema	un - 2014	

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 23 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	



#### **Compulsory Courses Specialisation Mathematics**

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 24 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation
Fundamentals Advanced Mathematics			10-M-SPZ-G-131-m01		
Module coordinator				Module offered by	
Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts	0	<u> </u>		
ContentsOne of the following topics in pure or applied mathematics which has not been chosen as subject of assessmentin module 10-M-ANW-Ü or 10-M-REI-Ü:Numerical Mathematics 1 (Solution of systems of linear equations and curve fitting problems, nonlinear equations and systems of equations, interpolation with polynomials, splines and trigonometric functions, numerical integration)Numerical Mathematics 2 (Solution methods and applications for eigenvalue problems, linear programming, initial value problems for ordinary differential equations, boundary value problems)Stochastics 1 (Combinatorics, Laplace models, selected discrete distributions, elementary measure and integration theory, continuous distributions: normal distribution, random variable, distribution function, product measures and stochastic independence, elementary conditional probability, characteristics of distributions: expected value and variance, limit theorems: law of large numbers, central limit theorem)Stochastics 2 (Elements of data analysis, statistics of data in normal and other distributions, elements of multivariate statistics)Introduction to Algebra (Fundamental algebraic structures: groups, rings, fields; Galois theory)					
metries Ordination itial valid higher of Introductegrals theorer Geome ke's the Introductegrals Introductegrals	s, main ry Diffe ues, sy order) action t and Ca n and a tric Ana eorem a action t s, fund s, fund sortion t	theorem on local surface rential Equations (Existe rstems of linear differenti o Complex Analysis (Com nuchy integral theorems, i applications, Weierstraß alysis (Fundamentals in a and applications in vecto o Projective Geometry (P amental theorems for pro o partial differential equa irst order, existence and	e theory, special class nce and uniqueness al equations, matrix pplex differentiability isolated singularities product theorem and analysis on manifolds r analysis and topolo rojective and affine p ojective spaces, duali <b>ations</b> (Examples of p uniqueness theorems	ses of surfaces) theorem; continuous exponential series, l and Cauchy-Rieman , meromorphic funct theorem of Mittag-L s, submanifolds, calo gy) lanes, projective and ties and polarities of partial differential eq s, basic equations of	culus of differential forms, Sto- d affine spaces, theorem of De-
Introdu applica Introdu tional a Operati graph t Introdu sation, ry of qu Intende The stu themat	iction t ictions, c iction t inalysis ions Re heoreti iction t modul iadratic ed learn dent kn ics. He	cryptographic methods, e o Functional Analysis (Ba s) esearch (Linear programm c problems) o Number Theory (Elemen ar arithmetics, prime test c remainder, quadratic fo ning outcomes nows and masters the est	(Techniques from con error-correcting codes anach spaces and Hil ning, duality theory, t ntary properties of dir ts and methods for fa rms, diophantine app sential methods and	nbinatorics, introduc bert spaces, bounde ransport problems, i visibility, prime num ctorisation, structure proximation and diop basic notions in one	ction to graph theory including ed operators, principles of func- ntegral linear programming, bers and prime number factori- e of the residue class rings, theo- ohantine equations).

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 25 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Courses (type, number of weekly contact hours, language - if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 90 to 180 minutes); if announced by the lecturer at the beginning of the course, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 26 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	Module title Abbreviation					
Overview Advanced Mathematics					10-M-SPZ-Ü-131-m01	
Module coordinator				Module offered by		
Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS		od of grading	E Contraction of the second se			
12	·	rical grade				
Duratio		Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
				which have not beer	n chosen as subject of as-	
		10dule 10-M-ANW-Ü or 10				
Numeri	ical Ma	thematics 1 (Solution of s	systems of linear equ	ations and curve fitt	ing problems, nonlinear equati-	
					nometric functions, numerical in-	
tegratio				. 0	-	
-		thematics 2 (Solution me	ethods and application	ons for eigenvalue pr	roblems, linear programming, in-	
		blems for ordinary differe				
					elementary measure and integra-	
tion the	eory, co	ontinuous distributions: r	normal distribution, ra	andom variable, dist	ribution function, product mea-	
					teristics of distributions: expec-	
ted val	ue and	variance, limit theorems	: law of large number	s, central limit theor	em)	
Stocha	stics 2	(Elements of data analys	is, statistics of data i	n normal and other	distributions, elements of multi-	
variate	statisti	ics)				
Introdu	iction t	o Algebra (Fundamental	algebraic structures:	groups, rings, fields	; Galois theory)	
Introdu	iction t	o Differential Geometry (	Curves in Euclidean s	spaces, curvature, Fr	enet equations, local classifica-	
tion, su	ıbmani	folds in Euclidean spaces	s, hypersurfaces in pa	articular, curvature o	of hypersurfaces, geodesics, iso-	
metries	s, main	theorem on local surface	e theory, special class	ses of surfaces)		
Ordina	ry Diffe	rential Equations (Existe	nce and uniqueness	theorem; continuou	s dependence of solutions on in-	
itial val	lues, sy	stems of linear differenti	al equations, matrix	exponential series, l	inear differential equations of	
higher	order)					
Introdu	iction t	<b>o Complex Analysis</b> (Con	nplex differentiability	and Cauchy-Riemar	nn differential equations, path in-	
tegrals	and Ca	uchy integral theorems,	isolated singularities	, meromorphic funct	tions and Laurent series, residue	
		applications, Weierstraß				
Geome	tric Ana	<b>alysis</b> (Fundamentals in a	analysis on manifolds	s, submanifolds, cal	culus of differential forms, Sto-	
ke's the	eorem a	and applications in vecto	r analysis and topolo	egy)		
Introdu	iction t	<b>o Projective Geometry</b> (P	rojective and affine p	lanes, projective an	d affine spaces, theorem of De-	
		amental theorems for pro				
					uations and partial differential	
•			•	•	f mathematical physics, bounda-	
		ems, maximum principle				
					ction to graph theory including	
		cryptographic methods, e				
Introduction to Functional Analysis (Banach spaces and Hilbert spaces, bounded operators, principles of func-						
tional a						
<b>Operations Research</b> (Linear programming, duality theory, transport problems, integral linear programming,						
		c problems)				
					bers and prime number factori-	
					e of the residue class rings, theo-	
		remainder, quadratic fo	rms, diophantine app	proximation and diop	pnantine equations).	
Intende	ed lear	ning outcomes				
The stu	ident ki	nows and masters the es	sential methods and	basic notions in two	specialised fields of mathema-	
					methods in these fields, and is	
			•	•	oth orally and in written form.	

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	data record Bachelor (180 ECTS) Mathematik - 2014	

Courses (type, number of weekly contact hours, language - if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

oral examination of one candidate each (approx. 30 minutes); assessment will have reference to the sub-field dealt with in module 10-M-SPZ-G as well as an additional sub-field of the specialisation mathematics as selected by the candidate

Language of assessment: German, English

Allocation of places

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Additional information

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Workload

Teaching cycle

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 28 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	



#### **Compulsory Electives**

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Sacherer S man I major mathematics (2014)	Jino Marzourg generated zo Jing zozij estani regi	P030 - 97 - 91
	data record Bachelor (180 ECTS) Mathematik - 2014	1 1
	data lecolu baciletoi (100 ECI3) Matternatik - 2014	1 1



## **Compulsory Electives Mathematics**

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 30 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	Module title Abbreviation						
Introdu	Introduction to Stochastics Financial Mathematics 10-M-EFM-131-m01						
Module coordinator Module offered by							
Dean o	fStudi	es Mathematik (Mathema	atics)	Institute of Mathem	natics		
ECTS	5 Method of grading Only after succ. compl.			npl. of module(s)			
9	numerical grade						
Duratio	Duration Module level Other prerequisites						
1 seme	ster	undergraduate					
Conten	ts		·				
term st of asse stocha	ructure t pricin stic mu	s and yield curves, forwa g in the stochastic one-p lti-period models, valuat	rds, payout profiles o eriod model, risk neu	of options and other utral price measures	h flows, actuarial present value, derivates, fundamental theorem , replication and completeness, nodel, Black-Scholes formula.		
Intend	ed leari	ning outcomes					
		acquainted with the fun practical problems and l			nastic financial mathematics, can		
		number of weekly contact hours, l	· · ·	••			
					ahle)		
V + Ü (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)							
written examination (approx. 90 to 180 minutes); if announced by the lecturer at the beginning of the course, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English							
Allocation of places							
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module appears in							
Bachel	or' deg	ree (1 major) Mathematic	s (2014)				

elected Topics from Mathematics         Iodule coordinator         ean of Studies Mathematik (Mathematics)         CTS       Method of grading         o       numerical grade         uration       Module level         semester       undergraduate         ontents       modules 10-M-REI-Ü, 10-M-ANW-Ü ar         umerical Mathematics 1 (Solution of son and systems of equations, interpolegration)       umerical Mathematics 2 (Solution merical Nathematics 2 (Solution merical Nathematics 2 (Solution merical value problems for ordinary differential value problems for ordinary differential value and variance, limit theorems:         unes and stochastic independence, elevalue and variance, limit theorems:       theorems:         tochastics 2 (Elements of data analys ariate statistics)       theorems:         torduction to Algebra (Fundamental analys ariate statistics)       theorems:	Only after succ. con  Other prerequisites  pplied mathematics nd 10-M-SPZ-Ü: systems of linear equi- lation with polynomia ethods and application ential equations, bou- models, selected dis- normal distribution, ra- ementary conditiona : law of large number sis, statistics of data in	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o random variable, dist il probability, charac rs, central limit theor in normal and other	chosen as subject of assessmen ting problems, nonlinear equati- pnometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
ean of Studies Mathematik (Mathema CTS Method of grading numerical grade uration Module level semester undergraduate ontents ne of the following topics in pure or a n modules 10-M-REI-Ü, 10-M-ANW-Ü ar umerical Mathematics 1 (Solution of s ns and systems of equations, interpole gration) umerical Mathematics 2 (Solution me ial value problems for ordinary differential value problems for ordinary differential value problems for ordinary differential statistics 2 (Elements of data analys ariate statistics) htroduction to Algebra (Fundamental a htroduction to Differential Geometry (	Only after succ. con  Other prerequisites  pplied mathematics nd 10-M-SPZ-Ü: systems of linear equi- lation with polynomia ethods and application ential equations, bou- models, selected dis- normal distribution, ra- ementary conditiona : law of large number sis, statistics of data in	Institute of Mathem npl. of module(s) which has not been uations and curve fitt als, splines and trigo ons for eigenvalue problem screte distributions, of andom variable, dist il probability, charac- rs, central limit theor in normal and other	chosen as subject of assessmen ting problems, nonlinear equati- pnometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
Method of grading         numerical grade         uration       Module level         semester       undergraduate         ontents       ontents         ne of the following topics in pure or a nodules 10-M-REI-Ü, 10-M-ANW-Ü ar         umerical Mathematics 1 (Solution of segration)         umerical Mathematics 2 (Solution metical value problems for ordinary differential value problems for ordinary differential value problems for ordinary differential value and variance, limit theorems:         unes and stochastic independence, elevative and stochastic of data analys ariate statistics)         tochastics 2 (Elements of data analys ariate statistics)         torduction to Algebra (Fundamental analys ariate statistics)	Only after succ. con  Other prerequisites  pplied mathematics nd 10-M-SPZ-Ü: systems of linear equi- lation with polynomia ethods and application ential equations, bou- models, selected dis- normal distribution, ra- ementary conditiona : law of large number sis, statistics of data in	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, or andom variable, dist il probability, charac- rs, central limit theor in normal and other	chosen as subject of assessmen ting problems, nonlinear equati- pnometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
numerical grade         uration       Module level         semester       undergraduate         ontents       undergraduate         umerical Mathematics 1 (Solution of solution of solution)       umerical Mathematics 2 (Solution merical value problems for ordinary differential value problems for ordinary differential value problems for ordinary differential value and stochastic independence, elevel value and stochastic independence, elevel value and variance, limit theorems:         tochastics 2 (Elements of data analys ariate statistics)       undergraduate         ontroduction to Algebra (Fundamental analys ariate statistics)       undergraduate	 Other prerequisites  pplied mathematics nd 10-M-SPZ-Ü: systems of linear equilation with polynomia ethods and application ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o random variable, dist il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
numerical grade         uration       Module level         semester       undergraduate         ontents       undergraduate         umerical Mathematics 1 (Solution of solution of solution)       umerical Mathematics 2 (Solution merical value problems for ordinary differential value problems for ordinary differential value problems for ordinary differential value and stochastic independence, elevel value and stochastic independence, elevel value and variance, limit theorems:         tochastics 2 (Elements of data analys ariate statistics)       undergraduate         ontroduction to Algebra (Fundamental analys ariate statistics)       undergraduate	 Other prerequisites  pplied mathematics nd 10-M-SPZ-Ü: systems of linear equilation with polynomia ethods and application ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o random variable, dist il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
uration       Module level         semester       undergraduate         ontents       ontents         ne of the following topics in pure or a nodules 10-M-REI-Ü, 10-M-ANW-Ü ar         umerical Mathematics 1 (Solution of sons and systems of equations, interpole or gration)         umerical Mathematics 2 (Solution metical value problems for ordinary different tochastics 1 (Combinatorics, Laplace on theory, continuous distributions: nures and stochastic independence, elevature and variance, limit theorems: tochastics 2 (Elements of data analysiariate statistics)         troduction to Algebra (Fundamental analysiante statistics)	 pplied mathematics nd 10-M-SPZ-Ü: systems of linear equ lation with polynomia ethods and applicatio ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o random variable, dist il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
semester undergraduate ontents ne of the following topics in pure or a modules 10-M-REI-Ü, 10-M-ANW-Ü ar umerical Mathematics 1 (Solution of s ns and systems of equations, interpol egration) umerical Mathematics 2 (Solution me ial value problems for ordinary different tochastics 1 (Combinatorics, Laplace on theory, continuous distributions: n ures and stochastic independence, el ed value and variance, limit theorems: tochastics 2 (Elements of data analys ariate statistics) introduction to Algebra (Fundamental a introduction to Differential Geometry (	 pplied mathematics nd 10-M-SPZ-Ü: systems of linear equ lation with polynomia ethods and applicatio ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	which has not been uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o random variable, dist il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
ontents ne of the following topics in pure or a n modules 10-M-REI-Ü, 10-M-ANW-Ü ar umerical Mathematics 1 (Solution of s ns and systems of equations, interpole egration) umerical Mathematics 2 (Solution me ial value problems for ordinary differential tochastics 1 (Combinatorics, Laplace on theory, continuous distributions: n ures and stochastic independence, el ed value and variance, limit theorems: tochastics 2 (Elements of data analys ariate statistics) htroduction to Algebra (Fundamental a htroduction to Differential Geometry (	nd 10-M-SPZ-Ü: systems of linear equi lation with polynomia ethods and applicatio ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o andom variable, dist Il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
ne of the following topics in pure or a modules 10-M-REI-Ü, 10-M-ANW-Ü ar <b>umerical Mathematics 1</b> (Solution of s ns and systems of equations, interpole egration) <b>umerical Mathematics 2</b> (Solution me ial value problems for ordinary different tochastics 1 (Combinatorics, Laplace on theory, continuous distributions: n ures and stochastic independence, el ed value and variance, limit theorems: tochastics 2 (Elements of data analys ariate statistics) htroduction to Algebra (Fundamental a htroduction to Differential Geometry (	nd 10-M-SPZ-Ü: systems of linear equi lation with polynomia ethods and applicatio ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o andom variable, dist Il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
n modules 10-M-REI-Ü, 10-M-ANW-Ü ar umerical Mathematics 1 (Solution of s ns and systems of equations, interpole gration) umerical Mathematics 2 (Solution me ial value problems for ordinary differe tochastics 1 (Combinatorics, Laplace on theory, continuous distributions: n ures and stochastic independence, el ed value and variance, limit theorems: tochastics 2 (Elements of data analys ariate statistics) ntroduction to Algebra (Fundamental a ntroduction to Differential Geometry (	nd 10-M-SPZ-Ü: systems of linear equi lation with polynomia ethods and applicatio ential equations, bou models, selected dis normal distribution, ra ementary conditiona : law of large number sis, statistics of data i	uations and curve fitt als, splines and trigo ons for eigenvalue pr ndary value problem screte distributions, o andom variable, dist Il probability, charac rs, central limit theor in normal and other	ting problems, nonlinear equati- phometric functions, numerical in roblems, linear programming, in- ns) elementary measure and integra- tribution function, product mea- teristics of distributions: expec- rem) distributions, elements of multi-
netries, main theorem on local surface rdinary Differential Equations (Existe ial values, systems of linear differenti igher order) introduction to Complex Analysis (Com- egrals and Cauchy integral theorems, in neorem and applications, Weierstraß p eometric Analysis (Fundamentals in a e's theorem and applications in vecto introduction to Projective Geometry (P argues, fundamental theorems for pro- introduction to partial differential equa quations of first order, existence and value problems, maximum principle introduction to Discrete Mathematics ( pplications, cryptographic methods, en- troduction to Functional Analysis (Ba- onal analysis) perations Research (Linear programm raph theoretic problems) introduction to Number Theory (Elementa- ation, modular arithmetics, prime test of quadratic remainder, quadratic for intended learning outcomes	Curves in Euclidean s s, hypersurfaces in pa- e theory, special class ince and uniqueness ial equations, matrix nplex differentiability isolated singularities product theorem and analysis on manifolds or analysis and topolo trojective spaces, duali <b>ations</b> (Examples of p uniqueness theorem and Dirichlet probler (Techniques from cor error-correcting codes anach spaces and Hil ning, duality theory, t ntary properties of di ts and methods for fa	spaces, curvature, Fr articular, curvature, Fr articular, curvature of ses of surfaces) theorem; continuou exponential series, l y and Cauchy-Riemar s, meromorphic funct theorem of Mittag-L s, submanifolds, cal- ogy) planes, projective an ities and polarities of partial differential eq s, basic equations of m.) mbinatorics, introduces) lbert spaces, bounded transport problems, in ivisibility, prime nume	renet equations, local classifica- of hypersurfaces, geodesics, iso- s dependence of solutions on in- linear differential equations of an differential equations, path in tions and Laurent series, residue effler, conformal maps) culus of differential forms, Sto- d affine spaces, theorem of De- f projective spaces) quations and partial differential f mathematical physics, bounda ction to graph theory including ed operators, principles of func- integral linear programming, abers and prime number factori- e of the residue class rings, theo

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	data record Bachelor (180 ECTS) Mathematik - 2014	

**Courses** (type, number of weekly contact hours, language – if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

oral examination of one candidate each (approx. 30 minutes) Language of assessment: German, English

#### Allocation of places

Additional information

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Workload

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Teaching cycle

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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#### Module appears in

Bachelor's with 1 major Mathematics (2014)		JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 33 / 191
		data record Bachelor (180 ECTS) Mathematik - 2014	

Module title Abbreviation							
Select	Selected Topics from the History of Mathematics 10-M-GES-131-m01						
Module coordinator Module offered by					<u> </u>		
Dean o	of Studio	es Mathematik (Mathema	atics)	Institute of Mathem	natics		
ECTS	TS Method of grading Only after succ. compl. of m			npl. of module(s)			
4	(not) successfully completed						
Duratio	Duration Module level Other prerequisites						
1 seme	ster	undergraduate					
Conter	its						
the fun	Idamen		articular in its relatio		; more in-depth discussion of and humanities as well as to the		
Intend	ed lear	ning outcomes					
	eories				and cultural genesis of mathema- Il ideas and concepts to a general		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
V + Ü (	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
project assignment (approx. 60 to 120 minutes) Assessment offered: in the semester in which the course is offered and in the subsequent semester Language of assessment: German, English							
	ion of p						
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)							
Modul	e appea	urs in					
Module appears in Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)							

Mathewatical Writing       10-M-MSC-131-m01         Module coordinator       Module offered by         Dean of Studies Mathematik (Mathematics)       Institute of Mathematics         ECTS       Met→ of grading       Only after succ. compl. of module(s)         4       (not) successfully completed          Duratior       Module level       Other prerequisites         1 semester       undergraduate          Contents						
Dean of Studies Mathematik (Mathematics)     Institute of Mathematics       ECTS     Method of grading     Only after succ. compl. of module(s)       4     (not) successfully completed        Duration     Module level     Other prerequisites       1 semester     undergraduate						
ECTS     Method of grading     Only after succ. compl. of module(s)       4     (not) successfully completed        Duration     Module level     Other prerequisites       1 semester     undergraduate						
4     (not) successfully completed        Duration     Module level     Other prerequisites       1 semester     undergraduate						
Duration         Module level         Other prerequisites           1 semester         undergraduate						
1 semester undergraduate						
Contents						
Discussion of good and bad mathematical writing using practical exercises and case examples. The course co- vers the whole range of mathematical texts from short proofs and the formulation of theorems and definitions to comprehensive works such as Bachelor's or Master's theses. Important aspects include not only mathematical rigour and efficiency but also didactic questions.						
Intended learning outcomes						
The student is able to formulate mathematical subject matter precisely and comprehensibly. He/She knows about the structures and conventions of mathematical literature and the requirements of scientific work.						
<b>Courses</b> (type, number of weekly contact hours, language — if other than German)						
V + Ü (no information on SWS (weekly contact hours) and course language available)						
<b>Method of assessment</b> (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)						
project assignment (approx. 60 to 120 minutes) Assessment offered: in the semester in which the course is offered and in the subsequent semester Language of assessment: German, English						
Allocation of places						
Additional information						
Workload						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)						

Module title Abbreviation						
Proseminar Mathematics					10-M-PRO-131-m01	
Module coordinator				Module offered by		
Dean of	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	atics	
ECTS	ECTS Method of grading Only after succ.			pl. of module(s)		
4	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites	Other prerequisites		
1 seme	ster	undergraduate				
Conten	ts					
Selecte	d basi	topics in mathematics.				
Intende	ed lear	ning outcomes				
of a giv	en topi				sters elaboration and structuring /She is able to participate active-	
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
talk (approx. 60 to 120 minutes) Assessment offered: in the semester in which the course is offered and in the subsequent semester Language of assessment: German, English						
Allocation of places						
Additio	nal inf	ormation				
Worklo	Workload					
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
	Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title Abbreviation						
School	School Mathematics from a Higher Perspective 10-M-SCH-131-m01					
Module coordinator Module offered by					I	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
4	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		selected topics in school implementation at both s			ation into wider theories and	
Intende	ed lear	ning outcomes				
	vancec	I mathematical theories.			between school mathematics athematical, didactical and me-	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
v + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
Assess	ment o	ment (approx. 60 to 120 ffered: in the semester in ssessment: German, Eng	which the course is	offered and in the s	ubsequent semester	
Allocat	ion of <sub>l</sub>	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
	Bachelor' degree (1 major) Mathematics (2014)					
Bachel	Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title Abbreviation						
Additional Seminar in Mathematics 10-M-SE2-131-m01					10-M-SE2-131-m01	
Module coordinator Module offered by						
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Its					
A selec	ted top	ic in mathematics.				
Intend	ed lear	ning outcomes				
of a giv	en topi				sters elaboration and structuring /She is able to participate active-	
Course	<b>S</b> (type, r	number of weekly contact hours, I	language — if other than Ger	rman)		
S (no ir	nformat	ion on SWS (weekly cont	tact hours) and cours	e language available	e)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
	•	60 to 120 minutes) ssessment: German, Eng	lish			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	е				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)						



# **Application-oriented Subject**

(40 ECTS credits)

Students must take one of the following application-oriented subjects, each with the specified mandatory courses and/or mandatory electives: Biologie (Biology), Chemie (Chemistry), Geographie (Geography), Informatik (Computer Science), Philosophie (Philosophy), Physik (Physics), Wirtschaftswissenschaft (Business Management and Economics).



# Application-oriented Subject Biology

(40 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 40 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title				Abbreviation	
The Plant Kingdom (AF)     07-1A1ZPF-AF-141-m0				07-1A1ZPF-AF-141-m01	
Module	e coord	inator		Module offered by	
holder	of the (	Chair of Plant Physiology	and Biophysics	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
of grou	ps in th Ind fun	ne plant kingdom, studen ctions of plant organisms	ts will acquire the fu	ndamental knowledg	versity of eukaryotes. At the level ge necessary to understand the scussed in an evolutionary and
Intende	ed leari	ning outcomes			
charact nisms t functio	eristics hat are ning of	s and major representative most suitable for invest	ves of groups in the p igating particular scie intal skills in the inter	lant kingdom Abili entific issues Famil	amiliarity with the distinguishing ity to select those plant orga- liarity with the components and copic and histological preparati-
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		e <b>ssment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
written	exami	nation (approx. 60 minut	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	Module appears in				
	0	ree (1 major) Mathematic	<b>с</b> р		
Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title				Abbreviation	
Evolution and the Animal Kingdom (AF)				07-1A1TI-AF-141-m01	
Module	e coord	inator		Module offered by	
holder Electro		Professorship of Zoology scopy	at the Department of	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
theses the exa groups	will be imple o in the and fun	discussed, and students f animals, students will b animal kingdom, student ctions of animal organism	will be introduced to be introduced to the p s will acquire the fun	major phylogenetic hylogenetic diversit damental knowledge	nental mechanisms and hypo- reconstruction methods. Using y of eukaryotes. At the level of e necessary to understand the discussed in an evolutionary and
Intende	ed lear	ning outcomes			
cepts o and ma most su microso	of phylo ajor rep uitable copes.	genetic relationships bet resentatives of groups in for investigating particula	ween plants/animals the animal kingdom ar scientific issues e interpretation of m	s Familiarity with th - Ability to select th Familiarity with the o	cies Familiarity with the con- ne distinguishing characteristics ose animal organisms that are components and functioning of ological preparations by light mi-
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)
		s <b>essment</b> (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	exami	nation (approx. 60 minute	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPO I (examination regulations	for teaching-degree progra	mmes)	
Module					
	-	ree (1 major) Computer So ree (1 major) Mathematic			
	-	ree (1 major) Computation		14)	

Module title				Abbreviation	
Plant Physiology (AF)     07-2A2PHYPF-AF-141-m01					07-2A2PHYPF-AF-141-m01
Module	e coord	inator		Module offered by	
holder	of the (	Chair of Plant Physiology	and Biophysics	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
4	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
opportu the bioo nal env general	unity to chemis ironme l princi	develop the fundamenta try of the cell and will the ent of plants in particular.	al skills for working in en move on to discus Using the example c odule will also elabo	a biological laborat s the physiological p f plants, the module	gy and will provide them with an cory. The module will first address processes that regulate the inter- e will introduce students to the pristic peculiarities of plants in
Intende	ed lear	ning outcomes			
tors that skills of	at distir n how t	nguish plant physiology f	rom animal and prok present scientific exp	aryotic physiology eriments Essential	these Familiarity with the fac- Fundamental knowledge and lab skills Familiarity with me-
		number of weekly contact hours, la			
		mation on SWS (weekly o			
		s <b>essment</b> (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	exami	nation (approx. 60 minut	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module					
	-	ree (1 major) Mathematic ree (1 major) Computatio		14)	

Module title Abbreviation					Abbreviation	
Animal	Physic	ology (AF)			07-2A2PHYTI-AF-141-m01	
Module	e coord	inator		Module offered by	<u> </u>	
holder logy	ofthe	Chair of Behavioral Physic	ology and Sociobio-	Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
4	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
module ration a	e will fo and exc	ocus on neurophysiology cretion).			in a physiological laboratory. The ts of metabolic physiology (respi-	
		ning outcomes				
					regulation of organisms. They ha- sentation of scientific results.	
Course	<b>S</b> (type, 1	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V + Ü (r	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		s <b>essment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 60 minut	es)			
Allocat	ion of <sub>l</sub>	places				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module						
	3achelor' degree (1 major) Mathematics (2014) 3achelor' degree (1 major) Computational Mathematics (2014)					

Module title Abbreviation					Abbreviation	
Genetics, Neurobiology, Behaviour (AF) 07-2A2GENV-AF-141-mo1					07-2A2GENV-AF-141-m01	
Modul	e coord	linator		Module offered by		
Dean o	of Studi	ies Biologie (Biology)		Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	erical grade				
Durati	on	Module level	Other prerequisites	i		
1 seme	ester	undergraduate				
Conter	nts	·	·			
Funda	mental	principles of genetics, n	eurobiology and beha	vioural biology.		
Intend	ed lear	ning outcomes				
		understand that there a nal behaviour.	re molecular, cellular	and system biologic	al mechanisms and processes in-	
Course	<b>es</b> (type,	number of weekly contact hours,	language — if other than Ge	rman)		
V + Ü (	no info	rmation on SWS (weekly	contact hours) and co	ourse language avai	lable)	
		<b>sessment</b> (type, scope, langu ble for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
writter	exami	nation (approx. 60 to 90	minutes)			
Alloca	tion of	places				
Additi	onal in	formation				
Worklo	bad					
Teachi	ng cyc	le				
Referre	ed to in	LPO I (examination regulatio	ns for teaching-degree progra	ammes)		
Modul	e appe	ars in				
Bache	lor' deg	gree (1 major) Computer S	Science (2014)			
	Bachelor' degree (1 major) Mathematics (2014)					
Bache	lor' deg	gree (1 major) Computati	onal Mathematics (20	14)		

Module title					Abbreviation	
Mathematical Biology and Biostatistics					07-M-BST-132-m01	
Modul	e coord	inator		Module offered by	I	
holder	of the (	Chair of Bioinformatics		Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
4		rical grade		• • • •		
Durati		Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter			<u>.</u>			
		principles of the most im	nortant mathematica	l and statistical met	hods in hiology	
		ning outcomes				
			tal chills in the avalu	ation of oxnoriments	s, the interpretation of readings	
		as well as the mathemati			s, the interpretation of readings	
		number of weekly contact hours, l	•			
		rmation on SWS (weekly o			able)	
		· · · · ·			ot every semester, information on whether	
		le for bonus)	ge in other than oerman,			
writter	n exami	nation (approx. 60 minut	es)			
Alloca	tion of <b>j</b>	olaces				
Additi	onal inf	ormation				
Worklo	oad					
Teachi	ing cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ummes)		
Modul	e appea	ars in				
Bachelor' degree (1 major) Biochemistry (2013)						
Bachelor' degree (1 major) Biology (2013)						
Bachelor' degree (1 major) Computer Science (2014)						
Bachelor' degree (1 major) Mathematics (2014)						
	Bachelor' degree (1 major) Computational Mathematics (2014)					
Bache	lor's de	gree (1 major, 1 minor) Bi	ology (Minor, 2013)			

Module title				Abbreviation		
Developmental Biology of Plants (AF)					07-3A3EBIOPF-AF-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Plant Physiology	and Biophysics	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
4	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
over a	plant's	entire life cycle from gerr	nination to reproduct	ion. The module will	of plant developmental biology l discuss the molecular determi- as well as their plasticity.	
Intend	ed lear	ning outcomes				
ganism nisms bryonic	ns. 3. Do underly c axes.	evelopmental biological print of the second se	processes at specific orphogenesis and org of the developmental	stages in the life cyc ganogenesis in plant l processes in plants	logy of selected plant model or- cle of plants. 4. Molecular mecha- ts. 5. Establishment of plant em- s that were discussed. 7. Plastici- nmental factors.	
-	· · ·	number of weekly contact hours, l	· · · · · · · · · · · · · · · · · · ·			
V + Ü (I	no infoi	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>Sessment</b> (type, scope, langua Ile for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 60 minut	es)			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					
		ree (1 major) Mathematic				
Bachelor' degree (1 major) Computational Mathematics (2014)						

Module title					Abbreviation
Plant a	nd Aniı	nal Ecology			07-3A30EKO-132-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Biologie (Biology)	_	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
and bio as on th fundam	otic env ne stru nental r	ironments. The module v cture and dynamics of po	vill focus on the funct pulations, communit y, will become famili	ional adaptation to ies and ecosystems ar with examples of	and animals with their abiotic environmental conditions as well . Students will be introduced to research findings and will acqui- nt ecological problems.
Intende	ed leari	ning outcomes			
portant	abioti vironm	c and biotic factors that international tents in the second second second second second second second second se	nfluence the distribut	tion and frequency o	ecology and with the most im- of occurrence of organisms in has to the assessment of envi-
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (n	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
written	exami	nation (approx. 90 minut	es)		
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	е			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Biology (2013) Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)					
Bachelor's degree (1 major, 1 minor) Biology (Minor, 2013)					

Module title					Abbreviation	
Genes,	, Molec	ules, Technologies	07-3A3GEMT-132-m01			
Module coordinator Modul				Module offered by		
Dean o	Dean of Studies Biologie (Biology)			Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
6	nume	rical grade				
Duration Module level		Module level	Other prerequisites			
1 semester undergraduate						
Conten	Contents					

The module Gene, Moleküle, Technologien (Genes, Molecules, Technologies) will include lectures on the following topics: The section Spezielle Genetik (Special Genetics) will build on Einführung in die Genetik (Introduction to Genetics) and will deepen the students' knowledge of topics from the following areas: structure and evolution of the eukaryotic genome, regulatory RNA, epigenetically and evolutionarily significant genetic mechanisms. The section will also focus on methods of gene expression profiling, reverse genetics and modern methods of gene function and gene sequence analysis. In the lecture Einführung in die Bioinformatik (Introduction to Bioinformatics), students will acquire an overview of major areas in the field of bioinformatics: protein sequence and protein domain analysis, phylogeny and evolution of sequences, protein structure, RNA/DNA sequences and structures, cellular networks (regulation, metabolism) and systems biology. During the section Einführung in die Biotechnologie (Introduction to Biotechnology), students will acquire an overview of the following topics: history of biotechnology, DNA and RNA technologies, recombinant antibodies, molecular diagnostics, nanobiotechnology, biomaterials, bioprocess engineering, microbial biotechnology, transgenic animals and plants, microfluidics. The lecture Einführung in die Pharmakokinetik (Introduction to Pharmacokinetics) will provide students with an overview of the rational development of drugs and active agents. The module component will discuss an important aspect for biologists in more detail: the optimisation of the pharmacokinetics of small molecules and proteins. Pharmacokinetics describes the uptake, distribution, metabolism and elimination of a drug or xenobiotic in an organism.

#### Intended learning outcomes

Students possess an advanced knowledge on genome evolution and the regulation of gene expression and are familiar with current methods in genetics as well as methods for the analysis of DNA and protein databases. They have acquired an overview of both traditional and modern methods in biotechnology and are familiar with fundamental topics in biotechnology. Students have acquired an overview of the fundamental principles of the development and review of active agents in research, clinical practice and the pharmaceutical industry. They are familiar with methods and technologies in biology and are able to evaluate potential applications of these in research and industry.

**Courses** (type, number of weekly contact hours, language – if other than German)

V (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

--

Workload

--

Teaching cycle

--

E	Bac	he	lor'	s v	vith	1	ma	jor	M	ath	nem	at	ics	(2014)	)

**Referred to in LPO I** (examination regulations for teaching-degree programmes)

#### Module appears in

Bachelor' degree (1 major) Biology (2013) Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor's degree (1 major, 1 minor) Biology (Minor, 2013)

Module	e title				Abbreviation		
Basic E	Biochen	nistry (AF)			07-3A3BC-141-m01		
Module	e coord	inator		Module offered by			
holder	of the (	Chair of Plant Physiology	and Biophysics	Faculty of Biology			
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
4	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
dents v will bee transla formed (PCR, D	with dec come fa tion) ar l on sel DNA and	eper insights into the mo amiliar with fundamental nd the biochemistry of ca ected topics that were di l protein gel electrophore	lecular biology and b principles of molecu rbohydrates, lipids, p scussed in the lecture	iochemistry of proka lar biology (replicatio proteins and nucleic e. The exercise will c	nt, the lecture will provide stu- aryotes and eukaryotes. Students on, transcription, splicing and acids. Experiments will be per- over practical aspects of lab work protein isolation).		
	-	ning outcomes					
		amiliar with the fundame	· · ·				
	-	number of weekly contact hours, l					
		mation on SWS (weekly o					
		<b>Sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
written	examiı	nation (approx. 60 minut	es)				
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
	-						
Teachi	ng cycl	е					
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module							
	0	ree (1 major) Mathematic	· •	``			
Bachel	or' deg	ree (1 major) Computatio	nal Mathematics (20:	14)			

Module	title				Abbreviation	
The Fau	ına of C	Germany (AF)			07-4A4FAU-AF-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Animal Ecology a	nd Tropical Biology	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con			
7	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Admission prerequi (minimum 80%).	site to assessment: ı	regular attendance of field trips	
Conten	ts					
They wi identify specific solidate	ill acqu ving spo c habita e the ki	ire a fundamental knowlecies, using specimens o ats or lifestyles. Exercises	edge of the systemat f animals. Selection s in a variety of habita	ics and taxonomy of of specimens will be ats will provide stude	to be found in Central Europe. these animals and will practise taxon-specific and will represent ents with an opportunity to con- pecimens including their ecology	
Intende	ed leari	ning outcomes				
of the in Central of spec	ndigen Europe ies, stu	ous fauna (vertebrates, i ean habitats as well as th	nvertebrates) and use neir faunas and phene t the biology and eco	e identification keys. ology. On the basis o logy of these species	classify selected representatives They are familiar with selected of the morphology and habitats as well as, where applicable, to	
		number of weekly contact hours, l				
V + Ü +	E (no i	nformation on SWS (wee	kly contact hours) an	d course language a	vailable)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether	
		sment with practical com ffered: once a year, sumr		minutes)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	immes)		
Module						
	-	ree (1 major) Mathematic		14)		
Dachell	u ueg	ree (1 major) Computatio	nat mathematics (20	14)		

Module	title				Abbreviation
Neurob	iology	1			07-4S1NVO1-132-m01
Module	coord	inator		Module offered by	
holder	of the C	hair of Neurobiology and	d Genetics	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	numei	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		and methods in molecula ehaviour and endogenou		ogenetic model syst	em Drosophila and humans)
Intende	ed learr	ning outcomes			
		acquired an advanced k ethods in neurobiology.	nowledge of the neu	robiology of a model	organism and are able to apply
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
Ü + S (n	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tes per 2 hours	candid ; time f informe	ate) or e) presentation (a to complete varies accord ed about the method and	pprox. 20 to 30 minu ding to subject area b	ites) or f) practical ex out will not exceed a	candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.
allocate logy) wi ces will 5% of p ject Bio themati ject Bio ble in o the oth places, courses dure, a tive mo they be plicants of ECTS all mod themati firstly, a and, se position	ed as fo ith 180 be allo laces ( logie (I ics and logy (a ics and logy (a ics and logy (a equot there v s of a m pplican dule w come a s' previ 5 credits lule cor ik (Mat accordi condly n in a th	ollows: Places will primar ECTS credits. Should the ocated to students of the a minimum of one particle Biology) with 60 ECTS cree Mathematik (Mathemati s well as potentially to st ta exceed the number of a. Should there be, withi vill be a uniform regulation odule component that an ts who already have succe ous academic achievements they have achieved and inponents in the subject of hematics)) at the time of ng to their average grade a according to their total in hird ranking will be calcu	ily be allocated to stu- module be used in or Bachelor's degree su- ipant in total) will be dits and to students ics), each with 180 EC udents of other 'impo- applications, the ren n one module compo- on for the courses of re concerned will be a cessfully completed a onsideration. A waiting est group 1 (95%): Pla- ents. For this purpose I their average grade of Biologie (Biology) ( application. This will e weighted according number of ECTS credi lated as the sum of the sum of the sum of the sum of the sum of the sum of the sum of the sum of the sum of the sum of the sum of the sum of the	adents of the Bachel other subjects, there abject Biologie (Biolo allocated to student of the Bachelor's de CTS credits, as part of porting' subjects). Sho naining places will b onent, several course one module compone allocated in a standa at least one other mod ng list will be mainta aces will primarily be applicants will be no of all assessments to excluding Chemie (C be done as follows: to the number of EC ts achieved (quantit nese two rankings, a	Favailable places, places will be or's degree subject Biologie (Bio- will be two quotas: 95% of pla- ogy) with 180 ECTS credits and s of the Bachelor's degree sub- gree subjects Computational Ma- of the application-oriented sub- ould the number of places availa- e allocated to applicants from es with a restricted number of nent. In this case, places on all ardised procedure. In this proce- odule component of the respec- tined and places re-allocated as e allocated according to the ap- ranked according to the number aken during their studies or of Chemistry), Physik (Physics), Ma- First, applicants will be ranked, TS credits (qualitative ranking) ative ranking). The applicants' and places will be allocated ac- ill be allocated according to the
qualitat followir	tive ran ng quot	king or otherwise by lot. as: Quota 1 (50% of plac	Selection process groes): total number of E	oup 2 (5%): Places w ECTS credits already	vill be allocated according to the achieved in modules/module of ECTS credits achieved, pla-

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ces will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

#### Additional information

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Workload

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## Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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## Module appears in

Bachelor' degree (1 major) Biology (2013)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Computational Mathematics (2014)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 54 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation
Integra	tive Be	havioral Biology 1			07-4S1NVO2-132-m01
Module	e coord	inator		Module offered by	
holder logy	of the (	Chair of Behavioral Physic	ology and Sociobio-	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
sing of	olfacto		inisation of behaviou		oment, perception and proces- behaviour, reproductive beha-
Intende	ed lear	ning outcomes			
		e acquired an advanced k current studies on releva		of behavioural biol	ogy and are able to deliver pre-
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + S (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
			ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			ges) or c) oral examination of one
candid tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical ex out will not exceed a	candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students
Allocat	ion of p	olaces			
allocate logy) w ces will 5% of p ject Bio themat ject Bio ble in o the oth places, courses dure, a tive mo they be plicant of ECTS all moo themat firstly, a and, se positio	ed as fo ith 1800 l be allo blaces ( blogie ( ics anco blogy (a one quo there w core quo there w s of a m pplicar odule w coredit lule con ik (Mat accordit condly n in a t	ollows: Places will primar ECTS credits. Should the ocated to students of the a minimum of one partic Biology) with 60 ECTS cred Mathematik (Mathemat s well as potentially to st the exceed the number of ca. Should there be, within will be a uniform regulation nodule component that a the who already have suc- ill be given preferential c available. Selection proce ous academic achievement s they have achieved and mponents in the subject hematics)) at the time of ng to their average grade , according to their total hird ranking will be calcu	ily be allocated to stue module be used in of Bachelor's degree su ipant in total) will be edits and to students ics), each with 180 EG tudents of other 'imper- applications, the rem in one module compo- on for the courses of re concerned will be cessfully completed a onsideration. A waiti ess group 1 (95%): Pla- ents. For this purpose I their average grade of Biologie (Biology) application. This will e weighted according number of ECTS credi lated as the sum of t	udents of the Bachel other subjects, there ubject Biologie (Biolo allocated to student of the Bachelor's de CTS credits, as part of orting' subjects). Sho naining places will b onent, several course one module compon allocated in a standa at least one other mo ng list will be mainta aces will primarily be aces will primarily be of all assessments to (excluding Chemie (C be done as follows: to the number of EC its achieved (quantit hese two rankings, a	available places, places will be or's degree subject Biologie (Bio- will be two quotas: 95% of pla- ogy) with 180 ECTS credits and as of the Bachelor's degree sub- gree subjects Computational Ma- of the application-oriented sub- ould the number of places availa- e allocated to applicants from es with a restricted number of nent. In this case, places on all ardised procedure. In this proce- odule component of the respec- ained and places re-allocated as e allocated according to the ap- ranked according to the number aken during their studies or of Chemistry), Physik (Physics), Ma- First, applicants will be ranked, TS credits (qualitative ranking) rative ranking). The applicants' and places will be allocated ac- rill be allocated according to the

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following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

# Additional information

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Workload

Teaching cycle

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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#### Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 56 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

			Abbreviation
orphology of Arthropods			07-4S1NVO3-132-m01
inator		Module offered by	
Chair of Animal Ecology a	nd Tropical Biology	Faculty of Biology	
od of grading	Only after succ. com	pl. of module(s)	
rical grade			
_	Other prerequisites		
-			
	I		
anatomy, phylogeny and	ecology of arthropods	5.	
able to explain arthropod	radiations in a funct	onal context as well	as to explain the importance of
· ·	anguage — if other than Ger	man)	
			able)
<b>essment</b> (type, scope, langua			
	·		
bllows: Places will primar ECTS credits. Should the pocated to students of the a minimum of one partic Biology) with 60 ECTS cred Mathematik (Mathemat is well as potentially to st the acceed the number of ta. Should there be, within will be a uniform regulation nodule component that a nets who already have suc- ill be given preferential c available. Selection proce- ous academic achievement is they have achieved and mponents in the subject thematics)) at the time of ing to their average grade for according to their total hird ranking will be calcu- tas: Quota 1 (50% of plac of the Faculty of Biology; a	ily be allocated to stue module be used in of Bachelor's degree su ipant in total) will be edits and to students ics), each with 180 E0 tudents of other 'imper applications, the rem in one module comport on for the courses of re concerned will be cessfully completed a onsideration. A waiti ess group 1 (95%): Pla ents. For this purpose d their average grade of Biologie (Biology) of application. This will e weighted according number of ECTS credit alted as the sum of the plicants with the sam Selection process gra- ses): total number of F among applicants with 5% of places): number	idents of the Bachel other subjects, there ibject Biologie (Biolo allocated to student of the Bachelor's de CTS credits, as part of orting' subjects). Sho naining places will b onent, several course one module compor allocated in a standa at least one other mod at least one other mod ng list will be mainta aces will primarily be of all assessments t fexcluding Chemie (C be done as follows: to the number of EC ts achieved (quantit nese two rankings, a ne ranking, places w oup 2 (5%): Places w CTS credits already h the same number	or's degree subject Biologie (Bio- will be two quotas: 95% of pla- ogy) with 180 ECTS credits and s of the Bachelor's degree sub- gree subjects Computational Ma- of the application-oriented sub- ould the number of places availa- e allocated to applicants from es with a restricted number of nent. In this case, places on all ardised procedure. In this proce- odule component of the respec- nined and places re-allocated as a allocated according to the ap- ranked according to the number aken during their studies or of Chemistry), Physik (Physics), Ma- First, applicants will be ranked, TS credits (qualitative ranking) ative ranking). The applicants' and places will be allocated ac- ill be allocated according to the achieved in modules/module of ECTS credits achieved, pla-
	od of grading         rical grade         Module level         undergraduate         anatomy, phylogeny and         ning outcomes         able to explain arthropod         ecosystems.         number of weekly contact hours, l         rmation on SWS (weekly         cessment (type, scope, langua         le for bonus)         oprox. 5 to 10 pages)         olaces         acces: 20. Should the num         ollows: Places will primate         ECTS credits. Should the         a minimum of one partice         Biology) with 60 ECTS credits.         Should there be, within         will be a uniform regulation         nodule component that a         ats who already have succi         ill be given preferential c         available. Selection proce         ava	inator Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Tropical Biology of of grading Chair of Animal Ecology and Ecology of arthropodes anatomy, phylogeny and ecology of arthropodes and there be, within one module component and success fully completed at the who already have successfully completed at the who already have success group 1 (95%): Pla ous academic achievements. For this purpose is they have achieved and their average grade weighted according , accor	Inator         Module offered by           Chair of Animal Ecology and Tropical Biology         Faculty of Biology           Dod of grading         Only after succ. compl. of module(s)           rical grade            Module level         Other prerequisites           undergraduate            anatomy, phylogeny and ecology of arthropods.            natomy, phylogeny and ecology of arthropods.            anatomy, phylogeny and ecology of arthropods.            anatoms, phylogeny and ecology of arthropods.            anatoms of weekly contact hours, language – if other than German)            mation on SWS (weekly contact hours) and course language avail            cesses             cecosystems. </th

#### Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

# Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 58 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation	
Basics	in Ligh	t- and Electron-Microsco	ру		07-4S1MZ1-132-m01	
Module	e coord	inator		Module offered by		
head of	f the De	epartment of Electronmic	roscopy	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Fundan	nental	principles of confocal las	er scanning microsco	py and electron mic	croscopy.	
Intende	ed lear	ning outcomes				
Studen	ts have	e acquired theoretical kno	owledge and practica	l skills in the area of	f light and electron microscopy.	
Course	<b>S</b> (type, r	number of weekly contact hours, l	language — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		<b>Sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 30 to 60	minutes)			
Allocat	ion of p	olaces				
written examination (approx. 30 to 60 minutes) Allocation of places Number of places: 18. Should the number of applications exceed the number of available places, places will be allocated as follows: Places will primarily be allocated to students of the Bachelor's degree subject Biologie (Bio- logy) with 180 ECTS credits. Should the module be used in other subjects, there will be two quotas: 95% of pla- ces will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one participant in total) will be allocated to students of the Bachelor's degree sub- ject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Ma- thematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented sub- ject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places availa- ble in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in a standardised procedure. In this proce- dure, applicants who already have successfully completed at least one other module component of the respec- tive module will be given preferential consideration. A waiting list will be maintained and places re-allocated as they become available. Selection process group 1 (95%): Places will be ranked according to the ap- plicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Che						

thematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot. Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the respective applicant; among applicants with the same number of subject semesters of the selection by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

#### Additional information

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 59 / 191
Duchelor 5 with 1 major Mathematics (2014)	Jino Walzbarg - generated zo hag zozą - exam. reg.	pusc 59 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	
	data lecolu Dachetol (100 ECI3) Mathematik - 2014	

# Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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# Module appears in

Bachelor' degree (1 major) Biology (2013)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Computational Mathematics (2014)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 60 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	Module title Abbreviation				
Analysis of Chromosomes					07-4S1MZ2-132-m01
Module coordinator				Module offered by	
head of the Department of Electronmicroscop			roscopy	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
Overvie	w of th	e structure of chromosor	nes of somatic and m	eiotic cells.	
Intende	ed learr	ning outcomes			
Studen	ts are a	ble to analyse chromoso	mal structures.		
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (n	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		e <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examir	nation (approx. 30 to 60 i	ninutes)		
Allocati	ion of p	olaces			
Numbe	r of pla	ces: 18. Should the num	per of applications ex	ceed the number of	available places, places will be

allocated as follows: Places will primarily be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one participant in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in a standardised procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration. A waiting list will be maintained and places re-allocated as they become available. Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot. Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

#### Additional information

		r
Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 61 / 191
bachelor 5 with 1 major mathematics (2014)	Jino Walzbarg - generated zo hag zozz - chain, reg.	puge 01/191
	data record Bachelor (180 ECTS) Mathematik - 2014	1 1
	data lecolu Dachetol (100 ECT3) Mathematik - 2014	1

# Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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# Module appears in

Bachelor' degree (1 major) Biology (2013)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Computational Mathematics (2014)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 62 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	title				Abbreviation
		ormatics 1			07-4S1MZ6-132-m01
Special	BIOIIII				07-451/020-132-1101
Module	coord	inator		Module offered by	
holder	of the (	Chair of Bioinformatics		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts	-			
		principles of the tree of li	fe fundamental princ	inles of phylogenet	ics (methods and markers), fun-
					A structure prediction, phylogene-
tic reco	nstruct	ion.			
Intende	ed learı	ning outcomes			
Studen	ts are a	able to use software and	databases for sequer	nce analysis, RNA st	ructure prediction and phyloge-
netic re	constr	uction.			
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
Method	l of ass	<b>sessment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
module is	creditab	le for bonus)			
		o to 20 pages)			
	-	ssessment: German or Er	nglish		
Allocat					
					f available places, places will be
					lor's degree subject Biologie (Bio- will be two quotas: 95% of pla-
					ogy) with 180 ECTS credits and
					ts of the Bachelor's degree sub-
					gree subjects Computational Ma-
					of the application-oriented sub-
					ould the number of places availa-
					be allocated to applicants from
					es with a restricted number of
					nent. In this case, places on all ardised procedure. In this proce-
					odule component of the respec-
		-			ained and places re-allocated as
					e allocated according to the ap-
					ranked according to the number
		-			aken during their studies or of
					Chemistry), Physik (Physics), Ma-
					: First, applicants will be ranked,
					TS credits (qualitative ranking)
		-			tative ranking). The applicants' and places will be allocated ac-
		-		_	vill be allocated according to the
					vill be allocated according to the
					achieved in modules/module
					of ECTS credits achieved, pla-

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ces will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of

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places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

# Additional information

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Workload

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# Teaching cycle

**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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#### Module appears in

Bachelor' degree (1 major) Biology (2013)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Computational Mathematics (2014)

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Module	e title				Abbreviation
Molecu	ılar mo	delling - From DNA to Pro	otein		07-4S1PS1-132-m01
Module	e coord	inator		Module offered by	
holder	of the (	Chair of Plant Physiology	and Biophysics	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
protein		ell as on the search for ar			function of nucleic acids and molecules using databases and
Intend	ed learı	ning outcomes			
		e acquired a specialist kn rk with relevant database		ure-function relation	nships of macromolecules and
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
1) Ü + V	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
compu	terised	practical examination (a	pprox. 6 hours)		
Allocat	ion of p	olaces			
logy) w ces wil 5% of p ject Bic themat ject Bic ble in c the oth places, course dure, a tive mo tive co tive tive mo tive mo tive tive mo tive tive mo tive tive mo tive tive tive tive tive tive tive tive tive tive tive tive tive tive	ith 180 l be allo places ( plogie () ics and plogy (a one quot there v s of a m pplicar odule w ecome a s' previ c credit: lule con ik (Mat accordi econdly n in a t g to this tive rar ng quot nents o	ECTS credits. Should the poated to students of the a minimum of one partic Biology) with 60 ECTS cred Mathematik (Mathemat s well as potentially to st the acceed the number of ta. Should there be, within will be a uniform regulation odule component that a the given preferential c available. Selection proce ous academic achievement is they have achieved and mponents in the subject hematics)) at the time of ng to their average grade , according to their total hird ranking will be calcu third ranking. Among ap thing or otherwise by lot. tas: Quota 1 (50% of plac	e module be used in of Bachelor's degree su ipant in total) will be edits and to students ics), each with 180 EG tudents of other 'impe- applications, the ren in one module compo- on for the courses of re concerned will be cessfully completed a onsideration. A waiti ess group 1 (95%): Pla ents. For this purpose d their average grade of Biologie (Biology) application. This will e weighted according number of ECTS credi- lated as the sum of to plicants with the sam Selection process gr- tes): total number of F among applicants with	other subjects, there allocated to student of the Bachelor's de CTS credits, as part of orting' subjects). Sho naining places will be onent, several course one module compor allocated in a standa at least one other mod ng list will be mainta acces will primarily be of all assessments t (excluding Chemie (( be done as follows: to the number of EC its achieved (quantit hese two rankings, a ne ranking, places w oup 2 (5%): Places w ECTS credits already	lor's degree subject Biologie (Bio will be two quotas: 95% of pla- ogy) with 180 ECTS credits and ts of the Bachelor's degree sub- gree subjects Computational Ma of the application-oriented sub- ould the number of places availa- be allocated to applicants from es with a restricted number of nent. In this case, places on all ardised procedure. In this proce- odule component of the respec- ained and places re-allocated as e allocated according to the ap- ranked according to the number aken during their studies or of Chemistry), Physik (Physics), Ma First, applicants will be ranked, TS credits (qualitative ranking) tative ranking). The applicants' and places will be allocated ac- vill be allocated according to the achieved in modules/module of ECTS credits achieved, pla-

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places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

# Additional information

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Workload

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# Teaching cycle

**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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#### Module appears in

Bachelor' degree (1 major) Biology (2013)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Computational Mathematics (2014)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 66 / 191
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Module title	Abbreviation
Methods in Plant Ecophysiology	07-4S1PS2-132-m01
Module coordinator N	Module offered by
holder of the Chair of Plant Physiology and Biophysics F	Faculty of Biology
ECTS Method of grading Only after succ. comp	ol. of module(s)
5 numerical grade	
Duration Module level Other prerequisites	
1 semester undergraduate	
Contents	
Complex experiments to introduce students to the current sta	
cussion of experimental findings in a comprehensive scientifi	ic context.
Intended learning outcomes	
Students are able to use current methods in plant ecophysiol and put these in a scientific context.	ogy as well as to document experimental findings
<b>Courses</b> (type, number of weekly contact hours, language — if other than Germa	an)
Ü + S (no information on SWS (weekly contact hours) and cou	rse language available)
<b>Method of assessment</b> (type, scope, language — if other than German, exa module is creditable for bonus)	amination offered — if not every semester, information on whether
log (approx. 10 to 20 pages)	
Allocation of places	
allocated as follows: Places will primarily be allocated to stud logy) with 180 ECTS credits. Should the module be used in oth ces will be allocated to students of the Bachelor's degree sub 5% of places (a minimum of one participant in total) will be all ject Biologie (Biology) with 60 ECTS credits and to students of thematics and Mathematik (Mathematics), each with 180 ECT ject Biology (as well as potentially to students of other 'impor ble in one quota exceed the number of applications, the rema the other quota. Should there be, within one module compon places, there will be a uniform regulation for the courses of or courses of a module component that are concerned will be all dure, applicants who already have successfully completed at tive module will be given preferential consideration. A waiting they become available. Selection process group 1 (95%): Place plicants' previous academic achievements. For this purpose, of ECTS credits they have achieved and their average grade of all module components in the subject of Biologie (Biology) (ex- thematik (Mathematics)) at the time of application. This will b firstly, according to their average grade weighted according to and, secondly, according to their total number of ECTS credits position in a third ranking. Among applicants with the same qualitative ranking or otherwise by lot. Selection process group following quotas: Quota 1 (50% of places): total number of EC components of the Faculty of Biology; among applicants with ces will be allocated by lot. Quota 2 (25% of places): number among applicants with the same number of subject semester.	her subjects, there will be two quotas: 95% of pla- oject Biologie (Biology) with 180 ECTS credits and llocated to students of the Bachelor's degree sub- f the Bachelor's degree subjects Computational Ma- S credits, as part of the application-oriented sub- ting' subjects). Should the number of places availa- aining places will be allocated to applicants from eent, several courses with a restricted number of ne module component. In this case, places on all located in a standardised procedure. In this proce- least one other module component of the respec- g list will be maintained and places re-allocated as the will be ranked according to the ap- applicants will be ranked according to the number f all assessments taken during their studies or of xcluding Chemie (Chemistry), Physik (Physics), Ma- be done as follows: First, applicants will be ranked, the number of ECTS credits (qualitative ranking) s achieved (quantitative ranking). The applicants' ese two rankings, and places will be allocated ac- e ranking, places will be allocated according to the up 2 (5%): Places will be allocated according to the the same number of ECTS credits achieved, pla- of subject semesters of the respective applicant;

Bachelor's with 1 major Mathematics (2014)

#### Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

# Module appears in

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Pharmaceutic				Abbreviation
Pharmaceutical Drugs in Plants 07-4S1PS3-132-m01				07-4S1PS3-132-m01
Module coord	inator		Module offered by	·
holder of the	Chair of Pharmaceutical E	Biology	Faculty of Biology	
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)	
5 nume	rical grade			
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents		I		
cals as well as the requireme	s to their application in p ents and analytical metho	harmacy. Microscopi	c and phytochemica	nal plants and phytopharmaceuti- l analyses will be performed and ed.
	ning outcomes			
	e acquired a specialist kn s on the requirements an		-	l plants and phytopharmaceuti-
	· · · ·	- · ·	· · · ·	cia.
	number of weekly contact hours, l			
	rmation on SWS (weekly			
module is creditat		ge — if other than German,	examination offered — if no	ot every semester, information on whether
tes per candic 2 hours; time	late) or e) presentation (a to complete varies accord ed about the method and	approx. 20 to 30 minu ding to subject area b	utes) or f) practical e out will not exceed a	candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students
Number of pla allocated as f				urse.

qualitative ranking or otherwise by lot. Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module

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components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

#### Additional information

Workload

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#### Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

#### Module appears in

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Module title					Abbreviation	
Laboratory Practical Course I			07-S1-LP1-132-m01			
Module coordinator				Module offered by		
Coordir	nator B	ioCareers	_	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Please consult with	academic advisory s	ervice in advance.	
Conten	ts					
This practical coursed is offered by an institution that is part of the University. Contents to be determined by the respective institution.						
Intende	ed lear	ning outcomes				
Studen	ts have	e developed skills which	qualify them to work	in their profession.		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no in	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete varies according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.						
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Biology (2013)						
Bachelor' degree (1 major) Mathematics (2014)						
Bachelor' degree (1 major) Computational Mathematics (2014)						
Bachelor's degree (1 major, 1 minor) Biology (Minor, 2013)						

Module title					Abbreviation	
Excursion I					07-S1-Ex1-132-m01	
Module	e coord	inator		Module offered by		
Coordinator BioCareers			Faculty of Biology			
ECTS	ECTS Method of grading Only after succ. co		Only after succ. com	mpl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Please consult with	academic advisory s	service in advance.	
Conten	ts					
Conten	ts of th	e field trip to be determin	ned by the respective	institution.		
Intende	ed leari	ning outcomes				
Studen	ts have	e developed skills which	qualify them to work	in their profession.		
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
E (no ir	nformat	ion on SWS (weekly cont	act hours) and course	e language available	2)	
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete varies according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.						
Allocat	ion of p	olaces				
Additional information						
Workload						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Biology (2013) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor's degree (1 major, 1 minor) Biology (Minor, 2013)						

Module title					Abbreviation	
Interdi	sciplina	ary Project I			07-S1-IP1-132-m01	
Module	e coord	inator		Module offered by		
Coordir	nator B	ioCareers		Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Please consult with	academic advisory s	ervice in advance.	
Conten	ts					
Conten	ts of th	e project to be determine	ed by the competent of	coordinators; conter	its will vary according to topic.	
Intende	ed lear	ning outcomes				
Studen	ts have	e developed skills which o	qualify them to work	in their profession.		
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
R (no ir	format	ion on SWS (weekly cont	act hours) and course	e language available	e)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
candida tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical ex out will not exceed a	ges) or c) oral examination of one candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in					
	Bachelor' degree (1 major) Biology (2013) Bachelor' degree (1 major) Mathematics (2014)					
Bachel	or' deg	ree (1 major) Computation	nal Mathematics (201	14)		
Bachel	or's de	gree (1 major, 1 minor) Bi	ology (Minor, 2013)			

Module	title				Abbreviation
Externa	l Pract	ical Course			07-5EP-132-m01
Module	e coord	inator		Module offered by	
Coordir	nator B	ioCareers		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Please consult with	academic advisory s	ervice in advance.
Conten	ts				
		complete a placement at ned by the respective insi		niversity research in	stitution or a business. Contents
Intende	ed lear	ning outcomes			
		amiliar with the structure o work in their professior		ons and businesses	and have developed skills which
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (no ir	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
candida tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical en out will not exceed a	ges) or c) oral examination of one candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
	-	ree (1 major) Biology (201	-		
	-	ree (1 major) Mathematic	-		
	-	ree (1 major) Computatio gree (1 major, 1 minor) Bi		14)	

Module	e title			Abbreviation	
Excursi	on II				07-S2-EX2-132-m01
Module	e coord	inator		Module offered by	
Coordir	nator B	ioCareers		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Please consult with	academic advisory s	service in advance.
Conten	ts				
Conten	ts of th	e field trip to be determin	ned by the respective	institution.	
Intende	ed learn	ning outcomes			
Studen	ts have	e developed skills which	qualify them to work	in their profession.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
E (no in	format	ion on SWS (weekly cont	act hours) and course	e language available	a)
		<b>eessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
candid tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical ex out will not exceed a	ges) or c) oral examination of one candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
-					
Module appears in					
Bachel Bachel	or' deg or' deg	ree (1 major) Biology (202 ree (1 major) Mathematic ree (1 major) Computatio gree (1 major, 1 minor) Bi	s (2014) nal Mathematics (20:	14)	

Module title					Abbreviation		
Interdi	sciplina	ary Project II			07-S2-IP2-132-m01		
Module	e coord	inator		Module offered by			
Coordir	nator B	ioCareers		Faculty of Biology			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
10	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate	Please consult with	academic advisory s	service in advance.		
Conten	ts						
Conten	ts of th	e project to be determine	ed by the competent of	coordinators; conter	nts will vary according to topic.		
Intende	ed learı	ning outcomes					
Studen	ts have	e developed skills which	qualify them to work	in their profession.			
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
R (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
candida tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical ex out will not exceed a	ges) or c) oral examination of one candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
	Module appears in						
	-	ree (1 major) Biology (201 ree (1 major) Mathematic	-				
	-	ree (1 major) Mathematic		14)			
	-	gree (1 major, 1 minor) Bi		-			

Module	e title				Abbreviation
Labora	tory Pra	actical Course II			07-S2-LP2-132-m01
Module	e coord	inator		Module offered by	
Coordir	nator B	ioCareers		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Please consult with	academic advisory s	service in advance.
Conten	ts				
		coursed is offered by an titution.	institution that is par	t of the University. C	ontents to be determined by the
Intende	ed leari	ning outcomes			
		amiliar with the structure profession.	es of internal institution	ons and have develo	pped skills which qualify them to
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (no ir	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		<b>eessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
candida tes per 2 hours	ate eac candid s; time	h (approx. 30 minutes) o late) or e) presentation (a	r d) oral examination approx. 20 to 30 minu ding to subject area b	in groups of up to 3 ites) or f) practical e out will not exceed a	ges) or c) oral examination of one candidates (approx. 20 minu- xamination (on average approx. maximum of 4 hours). Students urse.
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
Bachel Bachel	or' deg or' deg	ree (1 major) Biology (203 ree (1 major) Mathematic ree (1 major) Computatio gree (1 major, 1 minor) Bi	s (2014) nal Mathematics (20:	14)	



# Application-oriented Subject Chemistry

(32 ECTS credits)

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### Application-oriented Subject Chemistry Compulsory Courses

(26 ECTS credits)

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Modul	e title				Abbreviation
Introdu Subjec		o Inorganic Chemistry fo	r Students of Mather	natics and other	08-CM1-112-m01
Modul	e coord	inator		Module offered by	/
	ecturer of lecture "Experimentalchemie" (Experimental Chemistry)			Institute of Inorga	nic Chemistry
ECTS					
6	nume	rical grade			
Durati	on	Module level	Other prerequisites	i de la companya de l	
1 seme	ester	undergraduate			
Conter	nts				
Funda	mental	principles of general and	inorganic chemistry.		
		ning outcomes			
		e become familiar with th	e fundamental princi	ples of general and	l inorganic chemistry.
	-	number of weekly contact hours, I		• -	- /
	-	tion on SWS (weekly cont			le)
writter		<sup>ole for bonus)</sup> nation (approx. 90 minut <b>places</b>	es)		
Additio	onal inf	ormation			
Worklo	oad				
Teachi	ng cycl	е			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)	
Modul	e appea	ars in			
Bache Bache Bache	lor' deg lor' deg lor' deg	ree (1 major) Mathematic ree (1 major) Mathematic ree (1 major) Mathematic ree (1 major) Computatio	s (2012) s (2013) nal Mathematics (20		
	-	ree (1 major) Computatio	-		
васпе	ior aeg	ree (1 major) Computatio	nat Mathematics (20	13)	

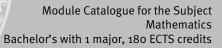
Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 80 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	1

Module title				Abbreviation		
Organio	Chemistry 1			08-0C1-141-m01		
Module	coordinator		Module offered by			
holder	of the Professorship of Organic	Chemistry	Institute of Organic	Chemistry		
ECTS	Method of grading	Only after succ. com	pl. of module(s)			
5	numerical grade					
Duratio	n Module level	Other prerequisites				
1 semes						
Content	ts					
the bon organic	ding situation of carbon and in	troduces students to discusses the fundam	the nomenclature of nental principles of s	of organic chemistry. It examines simple and moderately complex stereochemistry, substitution, ad-		
Intende	d learning outcomes					
of nome lecules.	enclature to determine simple s . They are able to describe and f rpose, they can analyse and cat	ubstance names. Stu formulate some of the	dents are able to an e most important rea	re able to use different systems alyse the stereochemistry of mo- actions in organic chemistry. For ions and can use them for simple		
Courses	<b>5</b> (type, number of weekly contact hours, l	anguage — if other than Ger	man)			
V + Ü (n	o information on SWS (weekly o	contact hours) and co	urse language avail	able)		
	l of assessment (type, scope, langua creditable for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
nutes) o	examination (approx. 90 to 180 or oral examination in groups (g ge of assessment: German, Eng	roups of 2, approx. 3		didate each (approx. 20 to 30 mi-		
Allocati	ion of places					
Additio	nal information					
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	appears in					
	or' degree (1 major) Mathematic or' degree (1 major) Computatio	-	(A)			
Buchell	Bachelor' degree (1 major) Computational Mathematics (2014)					

Module	title				Abbreviation	
Physica	al Chen	nistry 1: Principles of qua	antum mechanics and	l spectroscopy	08-PC1-141-m01	
Module	e coord	inator		Module offered by		
Spektro	lecturer of lecture "Grundlagen der Quantenmechanik and Spektroskopie" (Principles of Quantum Mechanics and Spectroscopy)			Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
8	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
UV-VIS tation, sted ab	spectro differen ove.	oscopy. In addition, the n ntial equations, Fourier tr	nodule discusses line	ear operators, eigenv	on, microwave spectroscopy and value problems, matrix represen- thematical bases of the topics li-	
		ning outcomes				
	ribe di	fferent spectroscopic me			em to molecules. They are able apply the mathematical bases of	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + V +	Ü + Ü (	no information on SWS (	weekly contact hours	) and course langua	ge available)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
nutes)	or oral	nation (approx. 90 to 180 examination in groups (g ssessment: German, Eng	roups of 2, approx. 3		didate each (approx. 20 to 30 mi-	
Allocat	-					
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
Referre	<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	urs in				
		ree (1 major) Mathematic				
Bachel	or' deg	ree (1 major) Computatio	nal Mathematics (20:	14)		

Module title	9			Abbreviation		
Introduction	n to Physics for Students	11-EFNF-072-m01				
Module coo	rdinator		Module offered by	<u> </u>		
		Applied Dhysics		and Actronomy		
	irector of the Institute of		Faculty of Physics a	and Astronomy		
	hod of grading	Only after succ. co	mpl. of module(s)			
7 num	nerical grade					
Duration	Module level	Other prerequisite	S			
2 semester	undergraduate					
Contents						
Mechanics,	vibration theory, thermo	dynamics, optics, scie	nce of electricity, Ato	mic and Nuclear Phys	ics.	
Intended lea	arning outcomes					
	s have knowledge of the	principles of Physics.				
	e, number of weekly contact hour	<u> </u>	arman)			
				abla)		
	formation on SWS (week	·				
module is credit	<b>SSESSMENT</b> (type, scope, lang	guage — if other than German	, examination offered — if no	ot every semester, informatio	n on whether	
	nination (approx. 120 mi	nules)				
Allocation o						
· · · · · · · · · · · · · · · · · · ·	of pool of general key sl	kills (ASQ): 10 places.	Places will be allocat	ed by lot.		
Additional i	nformation					
Workload						
Teaching cy	cle					
Peferred to	<b>in LPO I</b> (examination regulation	one for togehing dagree prog	(ammac)			
Referred to						
 Module app	ears in					
	egree (1 major) Biochemi	stry (2011)				
	egree (1 major) Biochemi	•				
	egree (1 major) Biochemi	,				
	egree (1 major) Biology (2					
	egree (1 major) Biology (2					
	egree (1 major) Biology (2					
	egree (1 major) Chemistry					
	egree (1 major) Chemistry					
	egree (1 major) Chemistry					
	egree (1 major) Chemistry	•				
Bachelor' degree (1 major) Geography (2007)						
Bachelor' degree (1 major) Geography (2008) Bachelor' degree (1 major) Geography (2010)						
Bachelor' degree (1 major) Computer Science (2007)						
Bachelor' degree (1 major) Computer Science (2007) Bachelor' degree (1 major) Computer Science (2014)						
Bachelor' degree (1 major) Computer Science (2010)						
	egree (1 major) Food Che					
	egree (1 major) Mathema					
Bachelor's with 1 I	major Mathematics (2014)		g • generated 26-Aug-2024 •	-	page 83 / 191	
		data record	Bachelor (180 ECTS) Mathema	444 0044		

#### Julius-Maximilians-UNIVERSITÄT WÜRZBURG



Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Mathematics (2007) Bachelor' degree (1 major) Biomedicine (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) FOKUS Chemistry (2011)



### Application-oriented Subject Chemisty Compulsory Electives

(14 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 85 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title					Abbreviation	
Organic Chemistry 2					08-0C2-141-m01	
Module	coord	inator		Module offered by		
holder	of the (	hair of Physically Organi	c Chemistry	Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
9	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
the exa on reac well as	mple o tions to rearrar	f carbonyl compounds, it o complex reaction mech	extends the student anisms. The course a ntroduces students to	s' knowledge of sub Ilso focuses on oxida	fic reactions of aromatics. Using stitution, elimination and additi- ation and reduction reactions as nethods of infrared spectrosco-	
Intende	ed learn	ning outcomes				
bonyl c they ca unknov	ompou n plan vn reac	nds. They are able to des and formulate multi-stag	scribe specific reactic e syntheses with con to describe importan	ons of carbonyls and applex reaction mecha	e the varying reactivity of car- aromatics. For that purpose, anisms and can transfer them to nods, to evaluate a spectrum and	
		umber of weekly contact hours, l				
V + V +	Ü (no i	nformation on SWS (wee	kly contact hours) an	d course language a	vailable)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		nation (approx. 180 to 24				
		ssessment: German, Eng	lish			
Allocat	ion of p	naces				
 Additio	nalinf	ormation				
Additio						
Worklo	ad					
	au					
Teaching cycle						
-						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
	-	ree (1 major) Mathematic				
Bachelo	Bachelor' degree (1 major) Computational Mathematics (2014)					

	e title		Abbreviation								
Physical and Theoretical Chemistry 3: Symmetry and Quantum Chemistry08-PC3-141-m01											
Module coordinator Module offer				Module offered b	y						
lecture	er of lec	ture		Institute of Physic	cal and Theoretical Chemistry						
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)							
6	nume	rical grade									
Duratio	on	Module level	Other prerequisites								
1 seme	ester	undergraduate									
Conter	nts										
This m	odule c	liscusses the fundament	al principles of quant	um chemistry and	symmetry in chemistry.						
Intend	ed lear	ning outcomes									
		e become familiar with th e able to apply the knowl			hemistry and symmetry in che-						
Course	es (type, i	number of weekly contact hours,	language — if other than Ge	rman)							
V + V +	- Ü + Ü (	(no information on SWS (	weekly contact hours	) and course langu	lage available)						
		S <b>essment</b> (type, scope, langua	age — if other than German,	examination offered — if	not every semester, information on whether						
nutes)	or oral	examination in groups (	groups of 2, approx. 3		indidate each (approx. 20 to 30 mi-						
					Language of assessment: German, English						
Allocation of places											
	Additional information										
Additio	onal inf	ormation									
Additio	onal inf	ormation									
 Additio  Worklo		ormation									
		ormation									
 Worklo											
 Worklo	oad										
 Worklo  Teachi 	oad ing cycl		s for teaching-degree progra	ammes)							
 Worklo  Teachi 	oad ing cycl	e	ns for teaching-degree progra	ammes)							
 Worklo  Teachi  Referro	oad ing cycl	e LPO I (examination regulation	ns for teaching-degree progra	ammes)							

Module title Abbreviation					Abbreviation
Theoretical Models in Chemistry     08-TC-141-m01					08-TC-141-m01
Module	e coord	inator		Module offered by	
lecture	r of lect	ture "Quantenchemie"		Institute of Physica	l and Theoretical Chemistry
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
3	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
spin, th tion an	ne Paul d excite	i principle, Slater determ ed states, the Born-Oppe	inants, the Hartree-Fo	ock method, correlat	antum chemistry. It focuses on ion energy, configuration interac- dels of H2+.
		ning outcomes			
		able to describe excited s	in the second		oncepts and models.
		number of weekly contact hours, l			
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
nutes)	or oral	nation (approx. 90 to 180 examination in groups (g ssessment: German, Eng	roups of 2, approx. 3		didate each (approx. 20 to 30 mi-
Allocat			,		
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Mathematics (2014)					
Bachel	or' deg	ree (1 major) Computatio	nal Mathematics (20:	14)	



## Application-oriented Subject Geography

(40 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg ● generated 26-Aug-2024 ● exam. reg.	page 89 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title Abbreviation					
Introdu	uction t	o the Geography of Cities	s, Towns and Villages	5	09-HG1SI-102-m01
Modul	e coord	inator		Module offered by	<u> </u>
holder	of the l	Professorship of Cultural	Geography	Institute of Geogra	ohy and Geology
ECTS		od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conter	nts				
Introdu	uction t	o "Settlement Geography	" <b>.</b>		
Intend	ed lear	ning outcomes			
Studer	nts poss	sess knowledge of Urban	Geography as well as	s in Geography of Ru	Iral Settlements.
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V + T (r	no infor	mation on SWS (weekly c	ontact hours) and co	urse language avail	able)
module i	s creditab	le for bonus)		examination offered — if no	ot every semester, information on whether
		nation (approx. 45 minute	es)		
Allocat	tion of <sub>l</sub>	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
		LPO I (examination regulation		mmes)	
		graphie Humangeograph graphie Humangeograph			
Modul	e appea	ars in			
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Political and Social Studies (2011) Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (Minor, 2012)					
		gree (2 majors) Pre- and I			·

Module title Abbreviation					Abbreviation
Introduction to Economic Geography 09-HG1WI-102-m01					09-HG1WI-102-m01
Module coordinator				Module offered by	
holder	of the l	Professorship of Economi	c Geography	Institute of Geograp	bhy and Geology
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conten	nts				
Introdu	uction t	o "Economic Geography".			
Intend	ed lear	ning outcomes			
		sess knowledge of Econo on theory and developme		are also acquainted	with the geographical economic
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V + T (r	no infor	mation on SWS (weekly c	ontact hours) and co	urse language availa	able)
module is	s creditab	<b>sessment</b> (type, scope, langua ole for bonus) nation (approx. 45 minute		examination offered — if no	t every semester, information on whether
Allocat	tion of <sub>l</sub>	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
		graphie Humangeograph ographie Humangeograph			
Module	e appea	ars in			
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Political and Social Studies (2011) Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (Minor, 2012) Bachelor's degree (2 majors) Pre- and Protohistoric Archaeology (2012)					

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Module title Abbreviation					
Introduction to Social and Population Geography					09-HG1SO-102-m01
Module coordinator				Module offered by	I
holder	of the l	Professorship of Social G	eography	Institute of Geogra	ohy and Geology
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conten	nts				
Introdu	uction t	o "Social and Population	Geography".		
Intend	ed lear	ning outcomes			
Studer	nts poss	sess knowledge of Social	and Population Geo	graphy as well as Civ	vilisation Geographical Research.
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)	
V + T (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)
module is written	s creditab exami	le for bonus) nation (approx. 45 minute	-		ot every semester, information on whether
Allocat		Diaces			
Additic	nal inf	ormation			
Auunu					
Worklo	ad				
Teachi	ng cvcl	e			
	0 29 30	-			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
§ 47 (1)	) 1. Geo	graphie Humangeograph graphie Humangeograph	ie		
Module	e appea	ars in			
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Political and Social Studies (2011) Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (2012) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (Minor, 2012) Bachelor's degree (2 majors) Pre- and Protohistoric Archaeology (2012)					

Module title Abbreviation					Abbreviation	
	General Physical Geography 1 (Earth System: Exogeneous Dynamics - Geomor- phology)					
Modul	e coord	inator		Module offered by		
holder	of the l	Professorship of Physical	Geography	Institute of Geograp	bhy and Geology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
solutio tains o ries, sł	on: mon or Aeolia hape of	oprocessual large forms, an "Draas" (huge dunes), coastlines, escarpments	e.g. endogenous/teo deflation (enclosed)	tonic forms like volu	lacial, Aeolian, marin, littoral, canoes, break clod, fold moun- ual large forms, e.g. glacial se-	
		ning outcomes				
Studer	nts disp	ose over basic knowledg	e of exogenous dyna	mics and geomorpho	ology.	
Course	<b>es</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + T (r	no infor	mation on SWS (weekly o	ontact hours) and co	urse language availa	able)	
module i	is creditab	le for bonus)		examination offered — if no	t every semester, information on whether	
		nation (approx. 45 minute	es)			
Allocat	tion of <sub>l</sub>	olaces				
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ng cycl	e				
		LPO I (examination regulation		mmes)		
§ 47 (1) 1. Geographie Physiogeographie § 66 (1) 1. Geographie Physiogeographie						
Module appears in						
Bachelor' degree (1 major) Mathematics (2014)						
Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013)						
	-	gree (1 major) Mathematic gree (1 major, 1 minor) Ge	-	2)		
		gree (1 major, 1 minor) Or gree (1 major, 1 minor) Pr	• • • •			
		gree (2 majors) Pre- and I				

Module title					Abbreviation	
General Physical Geography 2 (Earth System: Climate System)09-PG1KS-102-m01					09-PG1KS-102-m01	
Module	e coord	inator		Module offered by	I.	
holder	of the l	Professorship of Climato	ology	Institute of Geogra	ohy and Geology	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
	d energ				elestial mechanical basics; radia I appearance of the terrestrial cli-	
Intende	ed lear	ning outcomes				
Studen	ts will	gain a basic physical un	derstanding of the Ea	rth's climate system	•	
Course	<b>S</b> (type, r	number of weekly contact hours	, language — if other than Ge	rman)		
V + T (n	o infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langu le for bonus)	lage — if other than German,	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 45 minu	tes)			
Allocat	ion of <sub>l</sub>	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	ammes)		
§ 47 (1) 1. Geographie Physiogeographie § 66 (1) 1. Geographie Physiogeographie						
Module appears in						
	-	ree (1 major) Mathemati				
	-	ree (1 major) Mathemat				
	-	ree (1 major) Mathemati	-			
васпе	or's de	gree (1 major, 1 minor) (	eography (Minor, 201	2)		

Module title					Abbreviation	
General Physical Geography 3 (Earth System: Endogenic Dy			ystem: Endogenic Dy	ynamics)	09-PG1EnD-102-m01	
Module	e coord	inator		Module offered by	1	
holder rials Re		Professorship of Geodyna	amics and Geomate-	Institute of Geogra	aphy and Geology	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on .	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
nesis, s quakes	sedime s, oroge	ents/ sedimentary rocks, i enesis, continental crust,	metamorphosis; geol	ogical structures, c	eous rocks, plutonism/magma ge- ocean floor, plate tectonics, earth-	
		ning outcomes	<b>f d</b>			
		ose over basic knowledg				
		number of weekly contact hours, l mation on SWS (weekly c				
Metho module is	<b>d of as:</b> s creditat	sessment (type, scope, langua ble for bonus)	ge — if other than German, d		not every semester, information on whether	
Allocat		nation (approx. 45 minute	=5)			
AllUCal		places				
 Additio	nal inf	ormation				
Auditio						
 Worklo						
WUIK(O	au					
 Teachi		0				
Teduill	ing cycl	C				
 Doforra	d to in					
§ 47 (1)	Referred to in LPO I (examination regulations for teaching-degree programmes) § 47 (1) 1. Geographie Physiogeographie					
_	§ 66 (1) 1. Geographie Physiogeographie					
Module						
	-	ree (1 major) Mathematic ree (1 major) Mathematic	-			
	-	ree (1 major) Mathematic				
	-	gree (1 major, 1 minor) Ge		2)		

Module title					Abbreviation
Remote Sensing 1					09-FERN1-102-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Remote Sensing	_	Institute of Geograp	bhy and Geology
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Introdu	ction to	o "Geographical Remote S	Sensing".		
Intende	ed learr	ning outcomes			
		ess the following skills: d of different sensor and			System, Remote Sensing against
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + T (n	o infor	mation on SWS (weekly c	ontact hours) and co	urse language availa	able)
		e <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examir	nation (approx. 45 minute	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
§ 66 (1)	2. Geo	ographie Methoden der G	eographie		
Module	e appea	irs in			
Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010) Bachelor's degree (2 majors) Geography (2010)					

Remote Sensing z       0.9 FERN2-102-m01         Module criter of Name of Remote Sensing       Institute of Geography and Geology         ECTS       Metu-t of grading       Institute of Geography and Geology         ECTS       Metu-t of grading       Institute of Geography and Geology         S       numerical grade       -         Duration       Module level       Other prerequisites       -         Concerrect       Concerrect       Concerrect       -         Concerrect       Module level       -       -         Concerrect       Module level       Other prerequisites       -         Concerrect       Remote Sensing to Geography.           Intended learning outcomes            Sources (type, number of weekly contact hours, language – if other than German, camination specifications.           Concerrect             V + 1 (no information on SWS (weekly contact hours) and course language available)       Method of assessment (type, scope, language – if other than German, camination offered – if not eremy semster, information on whether module is retained for bouns)         writter = x=x=	Module	e title	·			Abbreviation		
holder of the Chair of Remote Sensing       Institute of Geography and Geology         ECTS       Method of grading       Only after succ. compl. of module(s)         5       numerical grade	Remote Sensing 2					09-FERN2-102-m01		
ECTS       Method of grading       Only after succ. compl. of module(s)         5       numerical grade          Duration       Module level       Other prerequisites         1 semester       undergraduate          Application of Remote Sensing to Geography.          Intended learning outcomes          Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications.         Courses (type, number of weekly contact hours, language – if other than German)       V + 1 (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)         written examination (approx. 45 minutes)         Allocation of places	Module	e coordi	inator		Module offered by			
5       numerical grade          Duration       Module level       Other prerequisites         1 semester       undergraduate          Contents         Application of Remote Sensing to Geography.         Intended learning outcomes         Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications.         Courses (type, number of weekly contact hours, language – if other than German)         V + T (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)         written examination (approx. 45 minutes)         Allocation of places               Additional information               Module appears in         Bachelor' degree (1 major) Computer Science (2014)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor's degree (1 major), nuinor) Geography (Minor, 2012)         Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012)         Bachelor's degree (1 m	holder	of the C	Chair of Remote Sensing		Institute of Geograp	bhy and Geology		
Duration       Module level       Other prerequisites         1 semester       undergraduate          Contents       Application of Remote Sensing to Geography.         Intended learning outcomes       Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications.         Courses (type, number of weekly contact hours, language – if other than German)       V + T (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)         written examination (approx. 45 minutes)         Allocation of places               Module appears in         Referred to in LPO I (examination regulations for teaching degree programmes)               Module appears in         Bachelor' degree (1 major) Mathematics (2014)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor's degree (1 major), nimior) Geography (Focus Physical Geography) (2010)         Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)	ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
1 semester       undergraduate          Contents         Application of Remote Sensing to Geography.         Intended learning outcomes         Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications.         Courses (type, number of weekly contact hours, language – if other than German)         V + T (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)         written examination (approx. 45 minutes)       Allocation of places             Additional information              Workload             Module appears in         Bachelor' degree (1 major) Computer Science (2014)         Bachelor' degree (1 major) Mathematics (2012)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor' degree (1 major), 1 minor) Geography (Minor, 2012)         Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012)         Bachelor's degree (1 major, 1 minor) Geography (Kous Physical Geography) (2010)	5	numei	rical grade					
Contents         Application of Remote Sensing to Geography.         Intended learning outcomes         Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications.         Courses (type, number of weekly contact hours, language – if other than German)         V + T (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)         wirtten examination (approx. 45 minutes)         Allocation of places            Morkload            Morkload            Bachelor' degree (n major) Computer Science (2014)         Bachelor' degree (1 major) Mathematics (2012)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor' degree (1 major) Geography (Minor, 2012)         Bachelor' degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)         Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)	Duratio	n	Module level	Other prerequisites				
Application of Remote Sensing to Geography. Intended learning outcomes Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications. Courses (type, number of weekly contact hours, language – if other than German) V + T (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) written examination (approx. 45 minutes) Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major, 1 minor) Geography (Kinor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)	1 seme	ster	undergraduate					
Intended learning outcomes Students have skills of current geographical fields of application concerning the cross-sectional methodology, consolidation of application possibilities of different sensor and platform specifications. Courses (type, number of weekly contact hours, language — if other than German) V + T (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) written examination (approx. 45 minutes) Allocation of places	Conten	ts						
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consolidation of application possibilities of different sensor and platform specifications. Courses (type, number of weekly contact hours, language – if other than German) V + T (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) written examination (approx. 45 minutes) Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)	Intende	ed learr	ning outcomes					
V + T (no information on SWS (weekly contact hours) and course language available)  Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)  written examination (approx. 45 minutes)  Allocation of places  Additional information  Workload  Teaching cycle  Referred to in LPO I (examination for teaching-degree programmes)  Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor's degree (1 major) Mathematics (2013) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) written examination (approx. 45 minutes) Allocation of places  Additional information  Workload  Teaching cycle  Referred to in LPO I (examination regulations for teaching-degree programmes)  Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2013) Bachelor's degree (1 major, 1 minor) Geography (Kinor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)	Course	<b>S</b> (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)			
module is creditable for bonus) written examination (approx. 45 minutes) Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)	V + T (n	o infor	mation on SWS (weekly c	ontact hours) and co	urse language availa	able)		
Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)				ge — if other than German, e	examination offered — if no	t every semester, information on whether		
Additional information Additional Additional information Additional Additional information	written	examir	nation (approx. 45 minute	es)				
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)	Allocat	ion of p	olaces					
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
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Referred to in LPO I (examination regulations for teaching-degree programmes)            Module appears in         Bachelor' degree (1 major) Computer Science (2014)         Bachelor' degree (1 major) Mathematics (2014)         Bachelor' degree (1 major) Mathematics (2012)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012)         Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)         Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)	Worklo	ad						
Referred to in LPO I (examination regulations for teaching-degree programmes)            Module appears in         Bachelor' degree (1 major) Computer Science (2014)         Bachelor' degree (1 major) Mathematics (2014)         Bachelor' degree (1 major) Mathematics (2012)         Bachelor' degree (1 major) Mathematics (2013)         Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012)         Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010)         Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
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Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
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Bachelor's degree (1 major, 1 minor) Geography (Minor, 2012) Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
Bachelor's degree (1 major, 1 minor) Geography (Focus Physical Geography) (2010) Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)								
Bachelor's degree (1 major, 1 minor) Geography (Focus Human Geography) (2010)		-				10)		



#### Application-oriented Subject Computer Science

(40 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 98 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title Abbreviation						
Algorithm and data structures					10-I-ADSV-141-m01	
Module	coord	inator		Module offered by		
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		alysis of algorithms, recu trees, graphs, basic grap			ods, data structures, abstract da-	
Intende	ed leari	ning outcomes				
student	ts are f	amiliar with the basic pai	radigms of the desigr	n of algorithms and a	y describe and analyse them. The are able to apply them in practical ns and to prove their correctness.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (no in	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	examiı		/ an oral examination	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	9				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelo	Bachelor' degree (1 major) Computer Science (2014)					
	Bachelor' degree (1 major) Mathematics (2014)					
	-	ree (1 major) Computation		•		
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2014)					

Module title Abbrevia					Abbreviation		
Tutorial Algorithm and data structures					10-I-ADST-141-m01		
Module	e coord	inator		Module offered by			
Dean o	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
		alysis of algorithms, recu trees, graphs, basic grap			ods, data structures, abstract da-		
Intende	ed lear	ning outcomes					
studen	ts are f	amiliar with the basic pai	radigms of the desigr	n of algorithms and a	y describe and analyse them. The are able to apply them in practical ns and to prove their correctness.		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
Ü (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
	ly) or b				50% of exercises to be completed sessment to be selected by the		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	ng cycl	e					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)							
Module appears in							
	Bachelor' degree (1 major) Computer Science (2014)						
	Bachelor' degree (1 major) Mathematics (2014)						
	-	ree (1 major) Computation					
Bachelor' degree (1 major) Aerospace Computer Science (2014)							

Module title Abbreviation					Abbreviation	
Algorithmic Graph Theory					10-I-AGT-141-m01	
Module	coord	inator		Module offered by		
holder	of the C	Chair of Computer Scienc	e l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
colourii of grapl	ngs, wo h probl	ork with planar graphs an	d find out how the ra niliar with new conce	nking algorithm of G pts, for example hov	ximal flows, find matchings and oogle works. Using the examples w we model problems as linear	
Intende	ed learn	ning outcomes				
cipants	are ab		om the course helps	solve a given graph	problems. In addition, the parti- problem algorithmically. In this prithms.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		e <b>essment</b> (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written oral exa	examir aminati		y an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	appea	irs in				
	Bachelor' degree (1 major) Computer Science (2014)					
	Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)					
	-			•		
Dachell	Bachelor' degree (1 major) Aerospace Computer Science (2014)					

Module title Abbreviat				Abbreviation	
3D Poin	nt Clou	d Processing			10-l-3D-141-m01
Module	coord	inator		Module offered by	
holder	of the (	Chair of Computer Science	e XVII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
	regist				oc-trees), calculating normals, k- mapping, applications to mobile
Intende	ed learı	ning outcomes			
munica data pro require	te with ocessii ments,	engineers / surveyors / on ng and have experienced in terms of memory requ	CV people / etc. Stud that real application irements and in term	ents are able to solv scenarios are challe s of implementation	d processing and are able to com- re problems of modern sensor enging in terms of computational issues.
		umber of weekly contact hours, la			
		mation on SWS (weekly o			
		<b>;essment</b> (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written oral exa	examii aminati		/ an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)				
Bachelo Bachelo	Module appears in Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014)				

Module title Abbreviation					Abbreviation	
Data Bases					10-l-DB-141-m01	
Module	e coord	inator		Module offered by		
Dean of	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Relation ment.	nal alg	ebra and complex SQL st	atements; database	olanning and norma	l forms; transaction manage-	
Intende	ed lear	ning outcomes				
The stu	dents	oossess knowledge abou	t database modelling	g and queries in SQL	as well as transactions.	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written oral exa	examii aminat		/ an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module appears in						
	Bachelor' degree (1 major) Computer Science (2014)					
Bachelor' degree (1 major) Mathematics (2014)						
	-	ree (1 major) Business Inf				
	-	ree (1 major) Computation		•		
васнею	Bachelor' degree (1 major) Aerospace Computer Science (2014)					

Module title				Abbreviation		
Information Transmission					10-l-lÜV-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Computer Scienc	e III	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
theory, duction	spectr to the	um and Fourier transform structure of computer ne	, modulation techniq	ue, structure of digi	d fault correction, information tal transmission systems, intro-	
		ning outcomes	ratical and practical	knowladza of the str	wature of customs for information	
		a knowledge that is nece			ructure of systems for information	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	exami		y an oral examination	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	Bachelor' degree (1 major) Computer Science (2014)					
	Bachelor' degree (1 major) Mathematics (2014)					
	-	ree (1 major) Computation		•		
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2014)					

Module title Abbreviation					Abbreviation	
Tutorial Information Transmission       10-I-IÜT-141-m01					10-I-IÜT-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Computer Scienc	e III	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
theory, duction	spectr to the		, modulation technic	jue, structure of digi	d fault correction, information tal transmission systems, intro-	
The stu	dents				ucture of systems for information	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
Ü (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
	ly) or b)				50% of exercises to be completed sessment to be selected by the	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	Module appears in					
Bachelor' degree (1 major) Computer Science (2014)						
	Bachelor' degree (1 major) Mathematics (2014)					
	-	ree (1 major) Computation				
Bachelor' degree (1 major) Aerospace Computer Science (2014)						

Module title Abbreviation				Abbreviation		
Comput	tational	Complexity			10-I-KT-141-m01	
Module	e coordir	nator		Module offered by		
Dean of	f Studies	s Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Method	d of grading	Only after succ. com	pl. of module(s)		
5	numeri	cal grade				
Duratio	on l	Module level	Other prerequisites			
1 semes	ster ı	undergraduate				
Conten	ts					
sumptio	on versu		terminism versus ind	eterminism, hierarch	nd time classes, memory con- nical theorems, translation me- of systems.	
Intende	ed learni	ng outcomes				
classes determi	s, genera inism ve	l relationships between	space and time clas erarchical theorems, t	ses, memory consur	complexity measurements and nption versus computation time, , P-NP problem, completeness	
Courses	<b>S</b> (type, nu	mber of weekly contact hours, la	anguage — if other than Ger	man)		
V + Ü (n	no inforn	nation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
	<b>d of asse</b> creditable		ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written oral exa	examina aminatio		/ an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocati	ion of pl	aces				
Additio	nal info	rmation				
Worklo	ad					
Teachir	Teaching cycle					
Referre	<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	Module appears in					
	-	ee (1 major) Computer So				
	-	ee (1 major) Mathematic				
Dachell	Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title Abbreviation					Abbreviation	
Logic for informatics					10-l-LOG-141-m01	
Module	e coord	inator		Module offered by		
Dean o	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		mantics of propositional ets, syntax and semantic		nd normal forms, Ho	rn formulas, SAT, resolution, infi-	
Intende	ed leari	ning outcomes				
					ositional logic, equivalence and semantics of predicate logic.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		e <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	examiı		y an oral examination	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	Bachelor' degree (1 major) Computer Science (2014)					
	-	ree (1 major) Mathematic		`		
Bachelor' degree (1 major) Computational Mathematics (2014)						

Module title Abbreviation							
Object	Object oriented Programming     10-I-OOP-141-m01						
Module	e coord	inator		Module offered by			
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts	<u>.</u>					
Polymo ment.	orphism	n, generic programming, r	neta programming, v	veb programming, te	mplates, document manage-		
Intende	ed lear	ning outcomes					
The stu their pr			rent paradigms of obj	ect-oriented prograr	nming and have experience in		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)			
V + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		<b>Sessment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
written oral exa	exami aminat		y an oral examinatior 2, approx. 30 minutes	n of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an		
Allocat							
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPOI (examination regulations	s for teaching-degree progra	mmes)			
	Module appears in						
	Bachelor' degree (1 major) Computer Science (2014)						
	Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Business Information Systems (2014)						
	Bachelor' degree (1 major) Business Information Systems (2014) Bachelor' degree (1 major) Computational Mathematics (2014)						
	-			•			
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2014)						

Module	e title				Abbreviation
Practic	al Cour	se in Programming			10-I-PP-141-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
10	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
The pro	ogramm	ning language Java. Indep	endent creation of si	mall to middle-sized	, high-quality Java programs.
Intende	ed lear	ning outcomes			
The stu	idents a	are able to independently	develop small to mi	ddle-sized, high-qua	ality Java programs.
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
P (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
If anno	unced ation c	by the lecturer at the beg	inning of the course,	the written examina	ion (approx. 60 to 120 minutes). tion can be replaced by an oral in groups (groups of 2, approx.
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Additio	nal info	ormation on module dura	tion: 1 to 2 semester	s.	
Worklo	ad				
Teachi	ng cycl	e			
Referre	<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)				
Module appears in					
Bachel Bachel	Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014)				

Module	title				Abbreviation
Comput	ter Arc	hitecture			10-I-RAK-141-m01
Module	coord	inator		Module offered by	
Dean of	fStudi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		t architectures, command vector processors, multi-c		pipelining, statical a	and dynamic instruction schedu-
Intende	ed lear	ning outcomes			
		master the most importar l operating systems.	nt techniques to desig	gn fast computers as	s well as their interaction with
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written oral exa	examii aminat		y an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	appea	ars in			
	-	ree (1 major) Computer S	•		
	-	ree (1 major) Mathematic		、 、	
	-	ree (1 major) Computation	-		
Bachel	Jr deg	ree (1 major) Aerospace (	computer Science (20	114)	

Module	title				Abbreviation
Digital	compu	ter systems			10-I-RALV-141-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
					chronous and asynchronous cir- programming, memory hierarchy.
Intende	ed learı	ning outcomes			
ming of	<sup>-</sup> easy r				up to the design and program- are description languages for the
Course	<b>S</b> (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V (no in	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
written	examiı		y an oral examinatior	n of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
Bachelo Bachelo	Bachelor' degree (1 major) Computer Science (2014) Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014)				
•		- ·			

Module	e title				Abbreviation
Tutoria	l Digita	al computer systems			10-I-RALT-141-m01
Module	e coord	inator		Module offered by	
holder	of the (	Chair of Computer Scienc	e V	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
			_		nchronous and asynchronous cir- programming, memory hierarchy.
Intende	ed lear	ning outcomes			
ming of	f easy r				up to the design and program- are description languages for the
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
	ly) or b)				50% of exercises to be completed ressment to be selected by the
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module	e appea	urs in			
Bachelo	or' deg	ree (1 major) Computer S	cience (2014)		
	-	ree (1 major) Mathematic			
	-	ree (1 major) Computation		•	
Bachelo	or deg	ree (1 major) Aerospace (	omputer Science (20	)14)	

Module	title				Abbreviation	
Comput	ter Net	works			10-I-RK-141-m01	
Module	coord	inator		Module offered by		
holder	of the C	Chair of Computer Scienc	e III	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
8	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
of comp and structure chies, c and ISC	outer n ucture dataflov ) archit	etworks and communicat of computer networks: new control and traffic cont ecture models. Internet:	tion systems: probler etwork structure, netw rol, transfer network. structure and basic n	n statement and intr vork access, access Communication pro nechanism, TCP/IP, r	systems. Performance analysis oduction to method architecture methods, digital transfer hierar- tocols: fundamental principles routing, network management. mmunication systems and net-	
Intende	ed learr	ning outcomes				
		oossess an intricate knov damental principles to ra	-	e of computer netwo	orks and communication systems	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written oral exa	examir aminati		y an oral examination 2, approx. 30 minutes	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an	
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				
Bachelo Bachelo	or' degi or' degi	ree (1 major) Computer S ree (1 major) Mathematic ree (1 major) Computatio ree (1 major) Aerospace C	s (2014) nal Mathematics (201	•		

Module	title				Abbreviation
Softwa	re Tech	nology			10-I-STV-141-m01
Module	coord	inator		Module offered by	
Dean of	fStudi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
	s and o				r interfaces, foundations of da- ., XML, scripting languages, web
Intende	ed leari	ning outcomes			
		possess a fundamental th ems, in particular for the v		al knowledge on the	e design and development of
Courses	<b>S</b> (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (no in	Iformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)
		<b>sessment</b> (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examiı		/ an oral examination	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Bachelo Bachelo Bachelo	or' deg or' deg or' deg	ree (1 major) Computer So ree (1 major) Mathematic ree (1 major) Business Inf ree (1 major) Computation ree (1 major) Aerospace C	s (2014) formation Systems (2 nal Mathematics (202	14)	

Module	e title				Abbreviation
Tutoria	l Softw	are Technology			10-l-STT-141-m01
Module	e coord	inator		Module offered by	
Dean of	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
	s and o				r interfaces, foundations of da- ., XML, scripting languages, web
Intende	ed lear	ning outcomes			
		possess a fundamental th ems, in particular for the v		al knowledge on the	e design and development of
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	<u>a)</u>
		<b>Sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
	ly) or b				50% of exercises to be completed sessment to be selected by the
Allocat	ion of <sub>l</sub>	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
	-	ree (1 major) Computer S			
	-	ree (1 major) Mathematic		,	
	-	ree (1 major) Business Int	•		
	-	ree (1 major) Computatio ree (1 major) Aerospace (		•	
Dachell	or ueg	ree (1 major) Aerospace (	computer Science (20	14)	

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Module	title				Abbreviation
Practica	al cour	se in software			10-I-SWP-141-m01
Module	e coord	inator		Module offered by	<u>.</u>
Dean of	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
10	(not) s	successfully completed	10-I-PP,10-I-STV		
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			ADSV, 10-I-ADST, 10-I-SST are re- es is highly recommended.
Conten	ts				
cation o	of solu		ML) and milestones,	user manual, progra	uirements specifications, specifi mming documentation, presenta
Intende	ed lear	ning outcomes			
The stu small te		possess the practical ski	lls for the design, dev	velopment and exect	ution of a software project in
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
P (no in	format	tion on SWS (weekly cont	act hours) and cours	e language available	2)
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		a larger software project r group)	in groups (approx. 3	oo hours per person	) and final presentation (approx.
Allocat	ion of <sub>l</sub>	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Module appears in					
Bachelo	or' deg	ree (1 major) Computer S	cience (2014)		
		ree (1 major) Mathematic			
Bachelo	or' deg	ree (1 major) Computatio	nal Mathematics (20	14)	

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Module	title				Abbreviation
Theoret	tical In	formatics			10-I-TIV-141-m01
Module	Nodule coordinator Module offered by				
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
		, decidability, countabilit xt-sensitive languages, c			ve grammars, context-free lan- NP completeness.
Intende	ed leari	ning outcomes			
tability,	finite		enerative grammars,	context-free languag	computability, decidability, coun- ges, context-sensitive languages,
Course	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (no in	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	)
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examiı		y an oral examination	of one candidate ea	t the beginning of the course, the ach (approx. 20 minutes) or an
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ree (1 major) Computer S			
	-	ree (1 major) Mathematic	•	、 、	
	-	ree (1 major) Computation		•	
Dachell	n ueg	ree (1 major) Aerospace (	computer Science (20	14)	

Module	title				Abbreviation
Tutoria	l Theor	etical Informatics			10-I-TIT-141-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
		, decidability, countabilit xt-sensitive languages, c			ve grammars, context-free lan- NP completeness.
Intende	ed leari	ning outcomes			
tability,	finite		enerative grammars,	context-free languag	computability, decidability, coun- ges, context-sensitive languages,
Courses	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (no in	format	tion on SWS (weekly cont	act hours) and cours	e language available	2)
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
	y) or b)				50% of exercises to be completed ressment to be selected by the
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	appea	in and a second s			
	-	ree (1 major) Computer S			
	-	ree (1 major) Mathematic			
	-	ree (1 major) Computatio ree (1 major) Aerospace (		•	
Duchen	or ucg	ree (1 major) Actospace (		· <del>· · · ·</del> ·	



## **Application-oriented Subject Philosophy**

(40 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 119 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	



#### Application-oriented Subject Philosophy Compulsory Courses

(15 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 120 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title Abbreviation						
Principles of Philosophy: historical epochs, main works, authors         o6-B-P1G-141-mo1					06-B-P1G-141-m01	
Module	coord	inator		Module offered by	<u> </u>	
holder	of the (	Chair of Practical Philoso	ohy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		o the systems and the his duction to formal logic; i			emic writing and research in phi- psophy.	
Intende	ed learr	ning outcomes				
Ability i as trans	to appl sparen	y the principles of logic to	o argumentation; abi vity, completeness, a	lity to apply general nd generalisability;	of philosophy. Formal outcomes: principles of argumentation such ability to present philosophical	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + S (n	io infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
oral exa	aminati	ion (approx. 25 minutes)				
Allocat	ion of p	olaces				
Additio	nal infe	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	appea	ins in				
Bachel	or' degi	ree (1 major) Mathematic	s (2014)			

Module title Abbrev					Abbreviation	
Philoso	ophical	principles of arts and hu	ımanities		06-B-P2G1-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Theoretical Philo	sophy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Introdu science		o the theory of intellectua	al disciplines; philoso	ophical bases of the	humanities and the social	
Intend	ed lear	ning outcomes				
to orga various culture texts ar	nise to intelle , and k nd issu	pics into overarching his ectual disciplines; knowle nowledge. Formal outcon	torical, social, and po edge of, and ability to nes (skills to be teste ncepts and philosopl	olitical schemata; ins o criticise, basic assu ed in assessments): A hical positions into c	s of our knowledge culture; ability sight into the scope and limits of umptions in systems of thought, Ability to analyse philosophical overarching intellectual schema- opropriate manner.	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
V + S (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 90 minut	es)			
Allocat	ion of <b>j</b>	places				
	r of sub			•	be allocated according to the act semesters, places will be allo-	
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			

Module title					Abbreviation
Philoso	ophical	principles of natural sci	ences and technolog	y	06-B-P2G2-141-m01
Module	e coord	inator		Module offered by	I
holder	of the (	Chair of Theoretical Philo	sophy	Institute of Philoso	phy
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Introdu ring.	iction to	o the theory of intellectua	al disciplines; philoso	ophical bases of the	natural sciences and enginee-
Intend	ed lear	ning outcomes			
to orga various culture texts ar	nise to intelle , and k nd issu	pics into overarching his ctual disciplines; knowle nowledge. Formal outcon	torical, social, and po edge of, and ability to nes (skills to be teste ncepts and philosopl	olitical schemata; ins criticise, basic assu d in assessments): nical positions into c	s of our knowledge culture; ability sight into the scope and limits of umptions in systems of thought, Ability to analyse philosophical overarching intellectual schema- opropriate manner.
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V + S (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>Sessment</b> (type, scope, langua Ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
written	exami	nation (approx. 90 minut	es)		
Allocat	ion of <b>j</b>	olaces			
	r of sub				be allocated according to the ect semesters, places will be allo-
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
Bachel	or' deg	ree (1 major) Mathematic	s (2014)		



#### Application-oriented Subject Philosophy Compulsory Electives

(15 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 124 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Theoretical Philosophy     o6-B-P3-141-m01       Module coordinator     Module offered by					
Module coordinator Module offered by					
holder of the Chair of Theoretical Philosophy Institute of Philosophy					
ECTS Method of grading Only after succ. compl. of module(s)					
10 numerical grade					
Duration Module level Other prerequisites					
1 semester undergraduate					
Contents					
Introduction to theoretical philosophy, using basic problems and paradigmatic texts.					
Intended learning outcomes					
tical philosophy; an overview of systems and disciplines in theoretical philosophy; ability to use and disting between different methods in theoretical philosophy; familiarity with, and ability to evaluate, methods of ar mentation and justification within theoretical philosophy; ability to reflect on the factors involved in the pro of theoretical opinion formation. Formal outcomes (skills to be tested in the assessment): Ability to analyse losophical texts and issues; ability to organise concepts and philosophical positions into overarching intella al schemata; ability to present philosophical positions in a structured and linguistically appropriate manner					
<b>Courses</b> (type, number of weekly contact hours, language — if other than German)					
V + S + S (no information on SWS (weekly contact hours) and course language available)					
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whe module is creditable for bonus)					
oral examination (approx. 25 minutes) in one of the seminars (seminar to be selected by students)					
Allocation of places					
Additional information					
Workload					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Mathematics (2014)					

Module title					Abbreviation
Practic	Practical Philosophy 06-B-P4-141-m01				
Module	e coord	inator		Module offered by	
holder	of the (	Chair of Practical Philoso	ohy	Institute of Philoso	phy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Introdu	ction to	o practical philosophy, us	sing basic problems a	and paradigmatic te>	xts.
Intende	ed leari	ning outcomes			
betwee tation a ral opin texts ar ta; abil	n differ and jus- nion for nd issu ity to p	rent methods in practical tification within practical mation. Formal outcome es; ability to organise co resent philosophical pos	philosophy; knowled philosophy; ability to s (skills to be tested i ncepts and philosoph itions in a structured	dge of, and ability to o reflect on the facto n the assessment): <i>i</i> nical positions into o and linguistically ap	r; ability to use and distinguish evaluate, methods of argumen- ors involved in the process of mo- Ability to analyse philosophical overarching intellectual schema- opropriate manner.
		umber of weekly contact hours, l nformation on SWS (weel			voilable)
			· · ·		
		le for bonus)	ge — If other than German, e	examination offered — if no	t every semester, information on whether
written	exami	nation (approx. 90 minut	es) in one of the sem	inars (seminar to be	selected by students)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module					
Bachel	Bachelor' degree (1 major) Mathematics (2014)				

Module title					Abbreviation
History of Philosophy 06-B-P5-141-m01					06-B-P5-141-m01
Module	e coord	inator		Module offered by	
holder	of the (	Chair of the History of Phi	losophy	Institute of Philoso	ohy
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Introdu	ction to	o the history of philosoph	ny, using basic proble	ems and paradigmat	ic texts.
Intende	ed lear	ning outcomes			
history with, u story of texts a	of phil ndersta f philos nd posi	osophy 2. ability to use a anding of, and ability to e ophy Formal outcomes (s	nd distinguish betwe valuate methods and skills to be tested in t e concepts and philo	een different method I questions of schola he assessment): 4. a sophical positions in	problems and positions in the s of historiography 3. familiarity arly inquiry with respect to the hi- ability to analyse philosophical nto overarching intellectual sche- lly appropriate manner
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + S +	S (no i	nformation on SWS (weel	kly contact hours) an	d course language a	vailable)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examiı	nation (approx. 90 minut	es) in one of the sem	inars (seminar to be	selected by students)
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
-					
Module	••				
Bachelor' degree (1 major) Mathematics (2014)					

Module title					Abbreviation
Issues	Issues of research in philosophy				06-B-P6-141-m01
Module	coord	inator		Module offered by	
holder	of the C	hair of the History of Phi	losophy	Institute of Philoso	ohy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
Selecte	d resea	arch issues in philosophy			
Intende	ed learr	ning outcomes			
philoso issues;	phy. Fo ability	ormal outcomes (skills to	be tested in the asse olarly work; ability to	essment): Ability to a	tanding of scholarly inquiry in analyse philosophical texts and elop philosophical issues and to
Courses	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + S +	S (no ii	nformation on SWS (weel	kly contact hours) and	d course language a	vailable)
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
oral exa	aminati	on (approx. 25 minutes)	in one of the semina	rs (seminar to be sel	ected by students)
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	appea	rs in			
Bachelo	or' degi	ree (1 major) Mathematic	s (2014)		

Module title					Abbreviation	
Text An	alysis:	Ancient Philosophy			06-B-W1-141-m01	
Module	e coord	inator		Module offered by		
holder	of the C	Chair of the History of Phi	losophy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Ancient	t philos	sophical texts.				
Intende	ed learr	ning outcomes				
sic assu the ass (when w intellec <b>Course</b>	umptio essme writing tual sc <b>s</b> (type, n	ns in ancient systems of nt): - ability to analyse pł	thought, culture, and nilosophical texts and organise historical co endently develop and anguage – if other than Ger	l knowledge Formal of d issues - ability to fo oncepts and philoso d present philosophi man)		
		· · · · · · · · · · · · · · · · · · ·			, it every semester, information on whether	
		le for bonus)			it every semester, mornation on whether	
written	examir	nation (approx. 90 minut	es) or term paper (ap	prox. 12 pages)		
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	in in				
Bachelor' degree (1 major) Mathematics (2014)						

Module title Abbreviation					Abbreviation	
Text Analysis: Medieval Philosophyo6-B-W2-141-m01					06-B-W2-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of the History of Phi	losophy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Mediev	al phil	osophical texts.				
Intende	ed learı	ning outcomes				
in the a ability f	issessr to inde		philosophical texts ar sophical issues and t	nd issues; ability to f o present them in ar	mal outcomes (skills to be tested follow the rules of scholarly work; a appropriate manner.	
		ion on SWS (weekly cont			2)	
Metho	d of ass	*	-		ot every semester, information on whether	
written	exami	nation (approx. 90 minut	es) or term paper (ap	prox. 12 pages)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module						
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			

Module title Abbreviation						
Text Analysis: Modern Philosophyo6-B-W3-141-m01					06-B-W3-141-m01	
Module coordinator Module off				Module offered by		
holder	of the (	Chair of Practical Philoso	ohy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Moderr	n philos	sophical texts.				
Intende	ed lear	ning outcomes				
mal out follow t linguist	tcomes the rule tically a	(skills to be tested in the s of scholarly work; abili appropriate manner.	e assessment): Abilit ty to independently d	y to analyse philoso levelop philosophica	and knowledge of modernity. For- phical texts and issues; ability to al issues and to present them in a	
		number of weekly contact hours, l				
-		tion on SWS (weekly cont	· · · · · · · · · · · · · · · · · · ·			
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	exami	nation (approx. 90 minut	es)			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in					
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			

Module title					Abbreviation
Text Analysis: Contemporary Philosophy					06-B-W4-141-m01
Module	Module coordinator			Module offered by	
holder	of the (	Chair of Practical Philoso	phy	Institute of Philoso	phy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten					
		philosophical texts.			
		ning outcomes			of contemporary philosophy;
contem texts ar es and	porary nd issu to pres	world. Formal outcomes es; ability to follow the ru ent them in a linguistical	(skills to be tested in ules of scholarly work lly appropriate manne	the assessment): A ; ability to independ er.	culture, and knowledge of the bility to analyse philosophical lently develop philosophical issu-
		umber of weekly contact hours, l			、 、
		ion on SWS (weekly cont			
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examir	nation (approx. 90 minut	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module					
Bachelor' degree (1 major) Mathematics (2014)					

Module title Abbreviation							
Basic d	Basic disciplines of theoretical philosophy   o6-B-W5-141-m01						
Module coordinator Module offered by							
holder	ofthe	Chair of Theoretical Philo	sophy	Institute of Philoso	phy		
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	Its						
Proble	ms in a	nd theoretical models of	basic disciplines of t	heoretical philosopl	ny.		
Intend	ed lear	ning outcomes					
issues; presen	ability t them	to follow the rules of sch in a linguistically approp	nolarly work; ability to riate manner.	independently dev	analyse philosophical texts and elop philosophical issues and to		
	_	number of weekly contact hours,			<u>`````````````````````````````````````</u>		
		tion on SWS (weekly cont			·		
		S <b>essment</b> (type, scope, langua ele for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
term pa	aper (a	pprox. 12 pages) or oral e	xamination (approx.	25 minutes)			
Allocat	ion of	places					
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachel	or' deg	ree (1 major) Mathematic	is (2014)				

Module	Module title Abbreviation						
Specifi	Specific disciplines of theoretical philosophy 06-B-W6-141-m01						
Module	e coord	inator		Module offered by			
holder	of the (	Chair of Theoretical Philo	sophy	Institute of Philoso	phy		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	'n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts	~					
Proble	ns in a	nd theoretical models of	special disciplines o	f theoretical philoso	phy.		
Intend	ed lear	ning outcomes					
ability them in	to follo 1 a ling	w the rules of scholarly w uistically appropriate ma	ork; ability to independent	ndently develop ph	philosophical texts and issues; ilosophical issues and to present		
Course	<b>S</b> (type, r	number of weekly contact hours, I	anguage — if other than Ger	man)			
S (no ir	format	tion on SWS (weekly cont	act hours) and cours	e language availabl	e)		
		<b>Sessment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether		
term pa	aper (a	pprox. 12 pages) or oral e	xamination (approx.	25 minutes)			
Allocat	ion of <sub>l</sub>	places					
Additio	nal inf	ormation					
Worklo	ad						
-							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
-							
Module appears in							
Bachel	or' deg	ree (1 major) Mathematic	s (2014)				

Module title					Abbreviation	
Basic d	Basic disciplines of practical philosophyo6-B-W7-141-m01					
Module	coord	inator		Module offered by		
holder	of the C	Chair of Practical Philoso	ohy	Institute of Philoso	ohy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
Problen	ns in ar	nd theoretical models of	basic disciplines of p	ractical philosophy.		
Intende	ed learr	ning outcomes				
losophy es; abil sent the	y. Form ity to fo em in a	al outcomes (skills to be ollow the rules of scholar linguistically appropriat	tested in the assessi ly work; ability to ind e manner.	ment): Ability to ana ependently develop	ental disciplines of practical phi- lyse philosophical texts and issu- philosophical issues and to pre-	
		umber of weekly contact hours, l				
S (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
term pa	iper (ap	oprox. 12 pages) or oral e	xamination (approx.	25 minutes)		
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	appea	rs in				
Bachelo	Bachelor' degree (1 major) Mathematics (2014)					

Module	Module title Abbreviation						
Specifi	Specific disciplines of practical philosophy 06-B-W8-141-m01						
Module	Module coordinator Module offered by						
holder	ofthe	Chair of Practical Philoso	phy	Institute of Philoso	phy		
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts	·					
Probler	ns in a	nd theoretical models of	special disciplines o	f practical philosoph	ıy.		
Intend	ed lear	ning outcomes					
to follo in a lin	w the r guistica	ules of scholarly work; al ally appropriate manner.	pility to independent	y develop philosoph	osophical texts and issues; ability nical issues and to present them		
	-	number of weekly contact hours, l					
S (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
		s <b>essment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
term pa	aper (a	pprox. 12 pages) or oral e	xamination (approx.	25 minutes)			
Allocat	ion of <sub>l</sub>	places					
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachel	or' deg	ree (1 major) Mathematic	s (2014)				

Module title					Abbreviation	
Problems of Older Philosophy					06-B-W9-141-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of the History of Phi	losophy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Probler	ns in a	ncient and medieval phil	osophy.			
Intende	ed learı	ning outcomes				
losophy ries. Fo tation; pletene	Intended learning outcomes: Content-related outcomes: Ability to analyse philosophical problems of older phi- losophy (ancient/medieval); in-depth knowledge of the history of philosophical concepts, arguments, and theo- ries. Formal outcomes (skills to be tested in the assessment): Ability to apply the principles of logic to argumen- tation; ability to apply general principles of argumentation such as transparency, consistency, discursivity, com- pleteness, and generalisability; ability to present philosophical issues in a structured and linguistically and rhe- torically appropriate way.					
	<u> </u>	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
term pa	aper (ap	oprox. 12 pages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
Bachel	Bachelor' degree (1 major) Mathematics (2014)					

Module title Abbreviation					Abbreviation
Probler	Problems of Modern Philosophy				06-B-W10-141-m01
Module	e coord	inator		Module offered by	
holder	of the C	Chair of the History of Phi	losophy	Institute of Philoso	phy
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Probler	ns in ea	arly modern and contemp	oorary philosophy.		
Intende	ed learr	ning outcomes			
ments, logic to discurs	and the argum	eories. Formal outcomes entation; ability to apply	(skills to be tested in general principles of alisability; ability to p	the assessment): A argumentation such	of philosophical concepts, argu- bility to apply the principles of n as transparency, consistency, l issues in a structured and lin-
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (no in	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
term pa	aper (ap	oprox. 12 pages)			
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	in			
Bachelor' degree (1 major) Mathematics (2014)					

Module	Module title Abbreviation					
Proble	Problems of Theoretical Philosophy 06-B-W11-141-m01					
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Theoretical Philos	sophy	Institute of Philoso	phy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Probler	ns in th	neoretical philosophy.				
Intende	ed leari	ning outcomes				
mentat comple	ion; ab teness	ility to apply general prin	ciples of argumentat	ion such as transpar	the principles of logic to argu- rency, consistency, discursivity, structured and linguistically and	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
S (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
term pa	aper (ap	oprox. 12 pages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in					
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			

Module title Abbreviation					Abbreviation	
Probler	Problems of Practical Philosophy				06-B-W12-141-m01	
Module	coord	inator		Module offered by		
holder	of the (	Chair of Practical Philoso	ohy	Institute of Philoso	ohy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
Problen	ns in p	ractical philosophy.				
Intende	ed learr	ning outcomes				
phy. For tation; a pletene	rmal ou ability ess, and	utcomes (skills to be test to apply general principle	ed in the assessment es of argumentation s	t): Ability to apply th such as transparency	f problems in practical philoso- e principles of logic to argumen- , consistency, discursivity, com- tured and linguistically and rhe-	
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (no in	ıformat	ion on SWS (weekly cont	act hours) and cours	e language available	.)	
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
term pa	per (ap	oprox. 12 pages)				
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
-						
Module						
Bachelo	Bachelor' degree (1 major) Mathematics (2014)					



# Application-oriented Subject Physics

(33 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 141 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	



### Application-oriented Subject Physics Compulsory Courses: Basics

(14 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 142 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title Abbreviation						
Introdu	ction t	o Physics Part 1 for stude	11-ENNF1-062-m01			
Module coordinator Module offered by					<u> </u>	
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
7		rical grade				
Duratio		Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts	<u> </u>				
		oration theory, thermody	namics.			
		ning outcomes				
		nave basic knowledge of	nhysics for engineeri	ng students		
		umber of weekly contact hours, l		-		
		mation on SWS (weekly d			ahle)	
		*			ot every semester, information on whether	
		le for bonus)	ge — If other than German, e	examination offered — if no	of every semester, information on whether	
		nation (approx. 120 minu	tes)			
Allocati			)			
		f pool of general key skill	s (ASO)· 20 places P	laces will be allocat	ed by lot	
		ormation	5 (15 Q). 20 places. I			
Worklo	ad					
WORKIO	au					
Toochin		•				
Teachir	ig cycu	5				
 Deferme	d 4 a 1 m					
Referre		LPO I (examination regulations	s for teaching-degree progra	mmes)		
		<b>!</b>				
Module						
	-	ree (1 major) Mathematic ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic	-			
	-	ree (1 major) Technology		ıls (2009)		
	-	ree (1 major) Technology				
	Bachelor' degree (1 major) Computational Mathematics (2009)					
	Bachelor' degree (1 major) Computational Mathematics (2014)					
	Bachelor' degree (1 major) Computational Mathematics (2012)					
Bachelo	Bachelor' degree (1 major) Computational Mathematics (2013)					
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2009)					
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2014)					
Bachelo	or' degi	ree (1 major) Aerospace (	Computer Science (20	011)		
	-	ree (1 major) Functional N				
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	lls (2006)		

Module title					Abbreviation	
Introdu	Introduction to Physics Part 2 for students of Physics Related Minor Subjects 11-ENNF2-062-mo1					
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
7	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts	-	-			
		ctricity, magnetism, optic	s. Atomic Physics.			
		ning outcomes	, ,			
		nave basic knowledge of	nhysics for engineeri	ng students		
		umber of weekly contact hours, l	· · · -	-		
		mation on SWS (weekly d			ahle)	
		· · · · · · · · · · · · · · · · · · ·			ot every semester, information on whether	
		le for bonus)	ge — If other than German, e	examination offered — if no	of every semester, information on whether	
		nation (approx. 120 minu	tes)			
Allocat			/			
		f pool of general key skill	s (ASO): 20 places. P	laces will be allocat	ed by lot	
		ormation	5 (10 Q). 20 places. 1			
Additio						
Worklo						
WOIKIO	au					
Teachir		•				
Teacini	ig cycl	e				
	J 4					
Referre	a to in	LPOI (examination regulations	s for teaching-degree progra	mmes)		
		•				
Module			- ( 0)			
	-	ree (1 major) Mathematic ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-			uls (2009)		
	Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010)					
Bachelor' degree (1 major) Computational Mathematics (2009)						
	Bachelor' degree (1 major) Computational Mathematics (2014)					
	Bachelor' degree (1 major) Computational Mathematics (2012)					
	Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013)					
	-	ree (1 major) Aerospace (		-		
		ree (1 major) Aerospace (				
	-	ree (1 major) Aerospace (				
	-	ree (1 major) Functional N	•	<i>.</i>		
	-	ree (1 major) Technology		lls (2006)		



# Application-oriented Subject Physics Compulsory Electives 1: Lab Course

(9 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 145 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	title				Abbreviation
Physics	Physics Laboratory Course for students of Physics Related Minor Subje				11-PNNF-062-m01
Module	coord	inator		Module offered by	
Managing Director of the Institute of Applied Physics			oplied Physics	Faculty of Physics a	and Astronomy
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio		Module level	Other prerequisites		
1 semes		undergraduate			
Conten		undergraduate	<u> </u>		
	nics, vi	bration theory, thermody	namics, optics, X-ray	s, nuclear magnetic	resonance, Atomic and Nuclear
Intende	d lear	ning outcomes			
The stu	dents l	know the principles of Ph	ysics.		
Courses	<b>5</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
		ion on SWS (weekly cont			2)
		*			ot every semester, information on whether
		le for bonus)			st every semester, mornation on whether
a) oral t	est (ar	prox. 15 minutes) during	experiment and b) u	ngraded written exa	mination (approx. 90 minutes)
Allocati					
	-	f pool of general key skill	c (ASO), 15 places P	lacos will be allocat	ad by lot
	•	ormation	5 (ASQ). 15 places. P		
Additio	natini	ormation			
Worklo	ad				
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	immes)	
Module	appea	irs in			
Bachelo	or' deg	ree (1 major) Mathematic	s (2008)		
		ree (1 major) Mathematic			
Bachelo	or' deg	ree (1 major) Mathematic	s (2012)		
Bachelo	or' deg	ree (1 major) Mathematic	s (2013)		
Bachelo	or' deg	ree (1 major) Mathematic	s (2007)		
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	als (2009)	
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)	
Bachelo	or' deg	ree (1 major) Computatio	nal Mathematics (20	09)	
		ree (1 major) Computatio			
		ree (1 major) Computatio			
	-	ree (1 major) Computatio			
	-	ree (1 major) Functional N		<i></i>	
	-			als (2006)	
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	als (2006)	

Module title					Abbreviation	
Practic	Practical Course A				11-P-PA-092-m01	
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Contents					
pagatio tests, w	on, grap /riting o	ohs, linear regression, av of lab reports and publica	erage values and sta		or, error approximation and pro- tribution functions, significance	
Intende	ed learr	ning outcomes				
le to inc measur	depenc ing pro	lently plan and conduct e	experiments, to coope valuate the measuring	erate with others, an g results on the basi	menting techniques. They are ab- d to document the results in a s of error propagation and of the	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
Ü (1 we Beispie	ekly co le aus	ntact hour), once a year	(winter semester)		ysis): V (1 weekly contact hour) + hermodynamics and Electricity,	
Method	l of ass	<b>essment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		le for bonus)				
1. Topic 2. Lab c ted if	cs cove course: a Test		ises: written examina and evaluating the e alk (with discussion)	xperiments will be c	inutes) onsidered successfully comple- understanding of the physics-re-	
Successful completion of approx. 50% of practice work is a prerequisite for admission to assessment component 1. To pass assessment component 2, students must pass both elements a) and b). Students will be offered one op- portunity to retake element a) and/or element b). Students must register for assessment components 1 and 2 online (details to be announced). Students must attend Auswertung von Messungen und Fehlerrechnung (Measurements and Data Analysis) befo- re attending Beispiele aus Mechanik, Wärmelehre und Elektrik (Examples from Mechanics, Thermodynamics and Electricity). To pass this module, students must pass both assessment component 1 and assessment component 2.						
Allocat				•		
Additio	nal info	ormation				
Worklo	ad					
Teachir	ng cycl	e				

Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 53 (1) 1. a) Physik Mechanik, Wärmelehre, Elektrizitätslehre, Optik, der speziellen Relativitätstheorie

§ 53 (1) 1. c) Physik physikalische Grundpraktika

§ 77 (1) 1. d) Physik "physikalische Praktika"

# Module appears in

Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major, 1 minor) Physics (Minor, 2010) No final examination Special study offering (2010)

	e title			,	Abbreviation
Basic Practical Course B (Minor Studies)			es)		11-P-NFB-122-m01
Module coordinator				Module offered by	·
Managing Director of the Institute of Applied Physics			pplied Physics	Faculty of Physics a	and Astronomy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
4	1	successfully completed	11-P-PA	•	
Duratio		Module level	Other prerequisites		
1 seme	ster	undergraduate			
Contents					
		of optics, vibrations and	wayos, science of al	actricity and circuits	with electric components.
		ning outcomes			with electric components.
le to in measu	depeno ring pro	dently plan and conduct	experiments, to coop valuate the measurin	erate with others, ar g results on the bas	menting techniques. They are ab- nd to document the results in a is of error propagation and of the
Course	<b>S</b> (type, 1	number of weekly contact hours,	language — if other than Gei	rman)	
P (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)
		S <b>essment</b> (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether
(with d the mo	iscussi dule co		to test the candidate	's understanding of	can be repeated once. And b) talk the physics-related contents of
		nt have to be successful		mpleted can be repe	eated once. Both components of
Allocat				mpleted can be repe	eated once. Both components of
Allocat	tion of	places		mpleted can be repe	eated once. Both components of
Allocat  Additic	tion of point of the second	places formation	ly completed.	· · ·	eated once. Both components of
Allocat  Additic	tion of point of the second	places	ly completed.	· · ·	eated once. Both components of
Allocat  Additic	tion of onal inf	places formation	ly completed.	· · ·	eated once. Both components of
Allocat  Additic Additic	tion of onal inf	places formation	ly completed.	· · ·	eated once. Both components of
Allocat  Additic Additic	tion of ponal inf	places formation ormation on module dura	ly completed.	· · ·	eated once. Both components of
Allocat  Additic Additic Worklo	tion of ponal inf	places formation ormation on module dura	ly completed.	· · ·	eated once. Both components of
Allocat  Additio Additio Worklo  Teachi 	tion of pnal inf pnal inf pad	places formation ormation on module dura	ly completed. ation: 1 to 2 semester	S.	eated once. Both components of
Allocat  Additio Additio Worklo  Teachi 	tion of pnal inf pnal inf pad	places formation ormation on module dura	ly completed. ation: 1 to 2 semester	S.	eated once. Both components of
Allocat  Additic Worklo  Teachi  Referre 	tion of ponal information ponal information pad ng cycl	places formation ormation on module dura e LPOI (examination regulation	ly completed. ation: 1 to 2 semester	S.	eated once. Both components of
Allocat  Additic Worklo  Teachi  Referre  Modulo	tion of ponal information onal information ong cycl ed to in e appea	places formation ormation on module dura e LPOI (examination regulation ars in	ly completed. ation: 1 to 2 semester	S.	eated once. Both components of
Allocat  Additio Worklo  Teachi  Referre Bachel	tion of pnal inf pnal inf pad ng cycl ed to in e appea or' deg	places formation ormation on module dura e LPOI (examination regulation ars in ree (1 major) Mathematic	ly completed. ation: 1 to 2 semester s for teaching-degree progra	S.	eated once. Both components of
Allocat  Additic Worklo  Teachi  Referre Bachel Bachel	tion of pnal inf pnal inf pad ng cycl ed to in e appea or' deg or' deg	places formation ormation on module dura e LPOI (examination regulation ars in	ly completed. ation: 1 to 2 semester s for teaching-degree progra	S.	eated once. Both components of
Allocat  Additic Worklo  Teachi  Referre  Bachel Bachel Bachel Bachel	tion of ponal information onal information onal information ong cycl ed to in e appea or' deg or' deg or' deg	places formation ormation on module dura e LPOI (examination regulation ars in ree (1 major) Mathematic ree (1 major) Mathematic	ly completed. ation: 1 to 2 semester s for teaching-degree progra cs (2014) cs (2012) cs (2013)	s.	eated once. Both components of
Allocat  Additic Worklo  Teachi  Referre Bachel Bachel Bachel Bachel Bachel	tion of onal inf onal inf oad ng cycl ed to in e appea or' deg or' deg or' deg or' deg	places formation ormation on module dura e LPOI (examination regulation ars in ree (1 major) Mathematic ree (1 major) Mathematic ree (1 major) Mathematic	ly completed. ation: 1 to 2 semester s for teaching-degree progra cs (2014) cs (2012) cs (2013) nal Mathematics (20	S	eated once. Both components of



# Application-oriented Subject Physics Compulsory Electives 2

(24 ECTS credits)

Out of several module components covering the same contents, students may only use one each. This means that the following combinations are not permitted:

- 11-KM may neither be combined with 11-QAM nor with 11-FKP.

- 11-STE may neither be combined with 11-ST nor with 11-ED.

- 11-TQM may neither be combined with 11-TM nor with 11-QM.

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	data record Bachelor (180 ECTS) Mathematik - 2014	

Modul	Module title Abbreviation					
Theore	Theoretical Electrodynamics     11-ED-141-mo1					
Modul	e coord	inator	Module offered by	<u> </u>		
-	ing Dire trophys	ector of the Institute of Th sics	eoretical Physics	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
8	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conter	Its					
Princip matter	les of e	lectrostatics, magnetost	atics, Maxwell equat	ions, covariant form	ulation, electrodynamics and	
Intend	ed lear	ning outcomes				
The stu thods.	Idents	have knowledge of the pr	inciples of classical	electrodynamics and	the required calculation me-	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V + Ü (	no infoi	rmation on SWS (weekly	contact hours) and co	ourse language avai	able)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 120 minu	tes)			
Allocat	ion of <sub>l</sub>	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	ummes)		
Modul	e appea	ars in				
	-	ree (1 major) Mathematic	•			
Bachel	or' deg	ree (1 major) Computatio	nal Mathematics (20	14)		

Module title Abbreviation					
Solid S	itate Pl	nysics 1			11-FKP-141-m01
Module	e coord	inator		Module offered by	I
Manag	ing Dir	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	and Astronomy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
8	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts	κ.			
		of solids: Bonding and s lectron gas)	tructure, lattice dynai	mics, thermal prope	rties, principles of electronic pro-
Intend	ed lear	ning outcomes			
		understand the basic cor erties, principles of electr			nd structure, lattice dynamics,
Course	<b>S</b> (type, 1	number of weekly contact hours, I	anguage — if other than Gei	rman)	
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		s <b>essment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
written	exami	nation (approx. 120 minu	tes)		
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Module	e appea	ars in			
Bachel	or' deg	ree (1 major) Mathematic ree (1 major) Computatio		14)	
Dacriel	or deg	ree (1 major) Computatio	natimathematics (20	14)	

Module title Abbreviation					Abbreviation
Quanta	, Atom	s, Molecules			11-QAM-141-m01
Module	coord	inator		Module offered by	
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Physica	al laws	of Atomic, Quantum and	Molecular Physics.		
Intende	ed learr	ning outcomes			
Quantu	m mec	hanical atom model, one	/multi-electron atom	s, electronic dipole t	d Molecular Physics (atoms: transitions, atoms in B field as tions, electronic excitations)
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)
		e <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examir	nation (approx. 120 minu	tes)		
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
Teachir	ng cycl	9			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	irs in			
Bachel	or' degi	ree (1 major) Mathematic	s (2014)		
Bachel	Bachelor' degree (1 major) Computational Mathematics (2014)				

Modu	Module title Abbreviation					
Quant	um Mea	hanics			11-QM-141-m01	
Modu	Module coordinator Mo					
	ging Dire	ector of the Institute of T sics	heoretical Physics	Faculty of Physics a	and Astronomy	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
8	nume	rical grade				
Durati	on	Module level	Other prerequisites	;		
1 seme	ester	undergraduate				
Conte	nts					
		sical physics, Schrödinge gular momentum and spi			quantum mechanics, harmonic	
Intend	ed lear	ning outcomes				
The st	udents	have knowledge of the p	rinciples of quantum	mechanics and the	required calculation methods.	
Course	<b>es</b> (type, r	number of weekly contact hours,	language — if other than Ge	rman)		
V + Ü (	no info	rmation on SWS (weekly	contact hours) and c	ourse language avai	lable)	
		<b>sessment</b> (type, scope, langua	age — if other than German,	examination offered — if n	ot every semester, information on whether	
writter	n exami	nation (approx. 120 minu	utes)			
Alloca	tion of <sub>l</sub>	places				
Additi	onal inf	ormation				
Workl	oad					
Teach	ing cycl	e				
Referr	ed to in	LPO I (examination regulation	ns for teaching-degree progra	ammes)		
Modu	e appea	ars in				
	-	ree (1 major) Mathematic ree (1 major) Computatic	-	14)		

Module title Abbreviation						
Statist	Statistical Mechanics and Thermodynamics 11-ST-141-mo1					
Modul	Module coordinator Mod					
	Managing Director of the Institute of Theoretical Physic and Astrophysics			Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
8	nume	rical grade				
Duratio	on	Module level	Other prerequisites	;		
1 seme	ester	undergraduate				
Conter	nts					
Princip chanic		hermodynamics, fundam	ental theorems, ther	modynamic potentia	als, principles of statistical me-	
Intend	ed lear	ning outcomes				
	udents ation m		inciples of thermody	namics and statistic	cal mechanics and the required	
Course	<b>es</b> (type, r	number of weekly contact hours, I	anguage — if other than Ge	rman)		
V + Ü (	no infoi	mation on SWS (weekly	contact hours) and co	ourse language avai	lable)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether	
written	exami	nation (approx. 120 minu	tes)			
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	bad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		
Modul	e appea	ars in				
	-	ree (1 major) Mathematic ree (1 major) Computatio		14)		

Modu	e title				Abbreviation
Theore	etical M	echanics			11-TM-141-m01
Modu	e coord	inator		Module offered by	<u> </u>
	ging Dire strophys	ector of the Institute of Th sics	neoretical Physics	Faculty of Physics a	and Astronomy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
8	nume	rical grade			
Durati	on	Module level	Other prerequisites	i i	
1 seme	ester	undergraduate			
Conte	nts				
Newto	nian me	echanics, Lagrangian and	l Hamiltonian formali	sm, conservation lav	ws, limits of classical physics.
Intend	led lear	ning outcomes			
The st metho		have knowledge of the p	rinciples of classical	theoretical mechanic	cs and the required calculation
Course	<b>es</b> (type, 1	number of weekly contact hours,	language — if other than Ge	rman)	
V + Ü (	(no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		<b>sessment</b> (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether
writter	ı exami	nation (approx. 120 minu	ites)		
Alloca	tion of	places			
Additi	onal inf	ormation			
Workl	oad				
Teach	ing cycl	e			
			-		
Referr	ed to in	LPOI (examination regulation	s for teaching-degree progra	ammes)	
Modul	le appea	ars in			
	-	ree (1 major) Mathematio			
Bache	lor' deg	ree (1 major) Computatio	nal Mathematics (20	14)	



# Application-oriented Subject Business Management and Economics

(40 ECTS credits)

	· · · · · · · · · · · · · · · · · · ·	
Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 157 / 191
, , , ,	data record Bachelor (180 ECTS) Mathematik - 2014	



# Application-oriented Subject Business Management and Economics Compulsory Courses

(30 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record Bachelor (180 ECTS) Mathematik - 2014	page 158 / 191
	data record bachelor (100 ECT3) Mathematik - 2014	1

Module	title				Abbreviation		
Introduction to Business Administration				12-EBWL-G-132-m01			
Module	coord	inator		Module offered by			
holder Organis		Chair for Human Resour	ce Management and	Faculty of Business	Management and Econom	ics	
ECTS Method of grading		Only after succ. con	npl. of module(s)				
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites	er prerequisites			
1 seme	ster	undergraduate					
Conten	ts						
overvie enterpr ve and on-mak	w of th ise ma in wha ing bel	e different perspectives y take place. The course	and main points of vi will focus on what co d. For this purpose, a	ew from which a theo mpanies or other org	stration. Students will acq pretical examination of bus anisations are, how they b f the economic subject's d	siness beha-	
Intende	ed learr	ning outcomes					
		lectures is to familiaris	e the students with th	e basic problem issu	es and perspectives withir	ו the	
Course	<b>5</b> (type, n	umber of weekly contact hours	, language — if other than Ge	rman)			
V + Ü (r	io infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		s <b>essment</b> (type, scope, langu le for bonus)	uage — if other than German,	examination offered — if no	t every semester, information on wł	nether	
written	examir	nation (approx. 60 minu	ites)				
Allocat	ion of p	olaces					
sensch matics with 18 gement Should dised p (50% of cants w number mesters success deratio the sam	aft (Bus for Eco o ECTS and Ec the nu rocedu f places ith the r of sub s, place sfully c n. Place	siness Management and nomics) (BSc with 180 f credits) as well as Back conomics) (60 ECTS cre- mber of applications ex- re among all applicants s): total number of ECTS same number of ECTS same number of ECTS of ect semesters of the re es will be allocated by lo ompleted at least one n es on all courses of the edure. A waiting list will	d Economics) (BSc wit ECTS credits), Wirtscha helor's students with t dits). The remaining p cceed the number of av s irrespective of their s credits already achie credits achieved, place espective applicant; an ot. Quota 3 (25% of pla nodule component of t	h 180 ECTS credits), aftsinformatik (Busin he minor Wirtschafts laces will be allocate vailable places, place ubjects according to ved in the respective es will be allocated b mong applicants with aces): allocation by lo the respective modul ith a restricted numb	lor's students of Wirtschaft Wirtschaftsmathematik (M ess Information Systems) ( wissenschaft (Business M d to students of other subj es will be allocated in a sta the following quotas: Quo degree subject; among ap y lot. Quota 2 (25% of plac the same number of subj- ot. Applicants who already e will be given preferential er of places will be allocat they become available.	athe- (BSc ana- ects. Indar- ta 1 opli- ces): ect se- have l consi-	
Additio	nal inf	ormation					
Worklo	ad						
Teachir	ng cycl	9					
Referre	d to in	LPOI (examination regulatio	ns for teaching-degree progra	ammes)			
Bachelor's	with 1 maj	or Mathematics (2014)	-	• generated 26-Aug-2024 • e achelor (180 ECTS) Mathemat		59 / 191	

# Module appears in

Deckeley's with a major Mathematics (as a)	INTLANGUE a constant of Aug and a system was	-
Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 160 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation
Introdu	uction t	o Economics			12-EVWL-G-132-m01
Module	e coord	inator		Module offered by	
holder of the Chair of Monetary Policy and International			and International	Faculty of Business	Management and Economics
Econor	1	- d - <b>f</b> d!	Out offerences		
ECTS		od of grading	Only after succ. con	ipl. of module(s)	
5		rical grade			
Duratio		Module level	Other prerequisites		
1 seme		undergraduate			
Conten			•		
		als with the following top shows how markets func			
		n of labour is the basis of			
		in action			
		and cartels endanger m			
-		market and the role of un ment's role in a social ma			
		tal redistribution guarant		ce in a market econo	omv
		ntal policy and the govern			,
		and agents in the macro			
		regate supply and demai fiscal policy	nd come into equilibi	rium?	
		i central bank stabilise ag	gregate demand by	setting interest rates	?
		ning outcomes		0	
	-		ceive a fundamental	understanding of ec	onomics. Students are able to
		conomic as well as macro			
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		<b>5essment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		nation (approx. 60 minut	 es)		
Allocat					
			with regard to availa	ble places for Bache	elor's students of Wirtschaftswis-
	•	•	•	,	Wirtschaftsmathematik (Mathe-
					ness Information Systems) (BSc
					swissenschaft (Business Mana-
					ed to students of other subjects. es will be allocated in a standar-
					the following quotas: Quota 1
		<b>e</b> 11	•	, .	e degree subject; among appli-
					by lot. Quota 2 (25% of places):
					h the same number of subject se-
					ot. Applicants who already have le will be given preferential consi-
					ber of places will be allocated in
		edure. A waiting list will			
Additio	onal inf	ormation			

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Bachelor's with 1 major Mathematics (2014)

# Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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# Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 162 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	title				Abbreviation	
Financial Accounting			12-ExtUR-G-132-mo	1		
Module	coord	inator		Module offered by		
holder o Taxatio		Chair of Business Manag	ement and Business	Faculty of Business	Management and E	conomics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten						
ble-ent	ry book	fers an introduction to th c-keeping as well as the f y according to German co	fundamentals of reco			
Intende	ed learr	ning outcomes				
		uire a basic unterstandin apply this knowledge, i.e				o arrange, re-
Courses	<b>5</b> (type, n	umber of weekly contact hours,	language — if other than Ger	man)		
V + Ü (n	io infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
	<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
written	examir	nation (approx. 60 minut	es)			
Allocati	ion of p	olaces				
senscha matics with 18 gement Should dised p (50% of cants w number mesters success deration the sam	aft (Bus for Eco o ECTS and Ec the nu rocedu f places ith the r of sub s, place sfully c n. Place	ces: 840. No restrictions siness Management and nomics) (BSc with 180 E credits) as well as Bach conomics) (60 ECTS cred mber of applications exc are among all applicants s): total number of ECTS c same number of ECTS c oject semesters of the rest es will be allocated by lo ompleted at least one m es on all courses of the rest edure. A waiting list will	Economics) (BSc with CTS credits), Wirtscha elor's students with th its). The remaining pl ceed the number of av irrespective of their s credits already achiev redits achieved, place spective applicant; ar t. Quota 3 (25% of pla odule component of t	n 180 ECTS credits), iftsinformatik (Busin ne minor Wirtschafts aces will be allocate vailable places, place ubjects according to ved in the respective es will be allocated b nong applicants with aces): allocation by lo he respective modul th a restricted numb	Wirtschaftsmathema ess Information Sys- wissenschaft (Busin d to students of oth- es will be allocated i the following quota e degree subject; am by lot. Quota 2 (25% in the same number of the same number of the same number of the same number of the same numbe	atik (Mathe- tems) (BSc ness Mana- er subjects. in a standar- s: Quota 1 ong appli- of places): of subject se- ilready have erential consi- allocated in
Additio	nal info	ormation				
 Worklo	ad					
 Ta1*		-				
Teachir	ig cycl	8				
 Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	appea	irs in				
	-	ree (1 major) Computer S ree (1 major) Mathematio	-			
Bachelor's v	with 1 maj	or Mathematics (2014)	-	• generated 26-Aug-2024 • e achelor (180 ECTS) Mathemat	-	page 163 / 191



Bachelor' degree (1 major) Business Management and Economics (2013) Bachelor' degree (1 major) Business Information Systems (2014) Bachelor' degree (1 major) Business Information Systems (2013)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 164 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation	
Manag	erial A	ccounting			12-IntUR-G-132-m01	
Module	e coord	inator		Module offered by	lule offered by	
holder ting	of the (	Chair of Business Manage	ement and Accoun-	Faculty of Business	Management and Economics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Outline 1. Mana 2. Mana 3. Diffe 4. Cost 5. Job c 6. Cost 7. Budg 8. Cost 9. Cost Reading Coener	urse of of syll agerial agerial rent typ centre osting centre geting a -volum inform g: uberg/F	fers an introduction to ai abus: accounting and financial accounting: basic terms bes of costs accounting based on tot based on total costs accounting and job costi and cost-variance analysi e-profit analysis ation and operating deci- in/Pedell: Kostenrechnur	accounting al costs ing based on direct/v s sions echnung und Kostena	analyse, Stuttgart.		
(most r	ecent e	ning outcomes				
After cc (i) set c (ii) defi the terr (iii) app	ompleti out the ne the ns; oly the	ng the course "Managem responsibilities of the co central concepts of interr basic methods of interna	mpany's internal acc nal enterprise compu l corporate accountir	ounting and control; ting restriction and c ng and control on a fu		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
V + Ü (r	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether	
written	exami	nation (approx. 60 minut	es)			
Allocat	ion of p	olaces				
sensch matics with 18 gement Should dised p	aft (Bu for Eco o ECTS t and E the nu procedu	siness Management and nomics) (BSc with 180 EC credits) as well as Bache conomics) (60 ECTS cred mber of applications exc ure among all applicants	Economics) (BSc wit CTS credits), Wirtscha elor's students with t its). The remaining pl eed the number of av irrespective of their s	h 18º ECTS credits), Iftsinformatik (Busin he minor Wirtschafts aces will be allocate vailable places, place ubjects according to	elor's students of Wirtschaftswis- Wirtschaftsmathematik (Mathe- ess Information Systems) (BSc swissenschaft (Business Mana- ed to students of other subjects. es will be allocated in a standar- the following quotas: Quota 1 e degree subject; among appli-	

Bachelor's with 1 major Mathematics (2014)

# UNIVERSITÄT WÜRZBURG

cants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

# Additional information

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Workload

Teaching cycle

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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### Module appears in

Bachelor' degree (1 major) Computer Science (2014)

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Business Management and Economics (2013)

Bachelor' degree (1 major) Business Information Systems (2014)

Bachelor' degree (1 major) Business Information Systems (2013)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 166 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation
Macroe	econom	iics 1			12-Mak1-G-132-m01
Module	e coord	inator		Module offered by	
holder of the Chair of International Economics		nomics	Faculty of Business Management and Economics		
ECTS	CTS Method of grading Only after succ. c		Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 semester undergraduate					
Conten	ts				

# Description:

This module covers basic macroeconomic relationships, the declaration of employment, production, interest, current and capital account, nominal and real exchange rate, prices and inflation - in the long run (with flexible wages and prices) and in the short term (with fixed wages and prices). The course will familiarise students with concepts which are of central importance in a globalised environment (e. g. interest rate arbitrage, foreign exchange risk, purchasing power parity). The explanations will be applied to current issues (e. g. current account balances in the global economy; questions related to the European monetary union and the global financial crisis).

### Outline of syllabus:

- 1. Macroeconomic issues and characteristics
- Issues of macroeconomics
- The measurement of economic activity
- 2. Long-term relationships
- The classic long-term model of the closed economy
- Money and Inflation
- The classic long-term model of a small open economy
- Unemployment
- 3. Short and medium-term relationships
- Fluctuations of economic activity: an introduction
- The IS-LM model of a closed economy
- The IS-LM model of an open economy
- Aggregate supply and Phillips curve
- Conclusion and outlook

### Reading:

The latest editions of the following textbooks:

N. Gregory Mankiw: Macroeconomics [students are recommended to read the original English edition; they may also read the German translation]

Olivier Blanchard and David H. Johnson, Macroeconomics Prentice Hall; [a German-language edition of the book by Oliver Blanchard and Gerhard Illing is available from Pearson Studium].

Michael Burda and Charles Wyplosz: Macroeconomics. A European text.

To illustrate the lecture, case studies in particular will be developed in which more current sources are used.

# Intended learning outcomes

This expertise enables the students to penetrate economically-intuitively and analytically macroeconomic interactions and problems in the course of advancing globalization and to deal with these arguments. Students learn to interpret on a scientific basis the impact of macroeconomic developments in individual economic actors (businesses, households, the state).

Courses (type, number of weekly contact hours, language - if other than German)

 $V + \ddot{U}$  (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

# Allocation of places

Number of places: 840. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics) (BSc with 180 ECTS credits), Wirtschaftsmathematik (Mathematics for Economics) (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) (BSc with 180 ECTS credits) as well as Bachelor's students with the minor Wirtschaftswissenschaft (Business Management and Economics) (60 ECTS credits). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standar-dised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

#### Additional information

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### Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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### Module appears in

Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Business Management and Economics (2013)

Bachelor' degree (1 major) Business Information Systems (2014) Bachelor' degree (1 major) Business Information Systems (2013)



Module	title				Abbreviation
Microeconomics 1					12-Mik1-G-132-m01
Module coordinator Module offered by					
holder of the Chair for Economics, Contract T formation Economics		tract Theory and In-	Faculty of Business	Management and Economics	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Theory 1. Utility 2. Com 3. Incor 4. Labo 5. Inter Theory 6. Prod 7. Profit	of the l y maxir parativ me and ur sup tempor of the f uction t maxin ; run ve	al consumption / saving irm: functions (technology) nisation rsus short run cost minin	s decisions		
Intende	ed leari	ning outcomes			

Students are systematically trained in microeconomic methods relevant in household and firm theory. Accordingly, they will know how to solve optimization problems under constraints. These scientific methods will serve as useful in many fields of specialization in economics and business administration. In particular, studends know analytically how to analyze the impact of changes in the economic environment, e.g., wages, interest rates, income on individual decision making.

Courses (type, number of weekly contact hours, language - if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

#### Allocation of places

Number of places: 840. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics) (BSc with 180 ECTS credits), Wirtschaftsmathematik (Mathematics for Economics) (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) (BSc with 180 ECTS credits) as well as Bachelor's students with the minor Wirtschaftswissenschaft (Business Management and Economics) (60 ECTS credits). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject se-

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	data record Bachelor (180 ECTS) Mathematik - 2014	

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mesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

### Additional information

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Workload

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# Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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# Module appears in

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Business Management and Economics (2013)

Bachelor' degree (1 major) Business Information Systems (2014)

Bachelor' degree (1 major) Business Information Systems (2013)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 170 / 191
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# Application-oriented Subject Business Management and Economics Compulsory Electives

(ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 171 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module	e title				Abbreviation	
Supply, Production and Operations Management. An Introduction			luction	12-BPL-G-132-m01		
Module coordinator				Module offered by		
holder of the Chair of Business Management and Industrial Management			Faculty of Business	Management and E	conomics	
			Only after succ. con	npl. of module(s)		
5	nume	rical grade	grade			
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
			h an overview of funda ctions as well as a mod			
Intende	ed lear	ning outcomes				
rate pro	ocurem	ent, production and lo	and discuss the object gistics as well as their i ning models in these fie	nterdependencies. I		•
Course	<b>S</b> (type, r	number of weekly contact hour	s, language — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (week	y contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, lang le for bonus)	guage — if other than German, o	examination offered — if no	ot every semester, informati	ion on whether
written	exami	nation (approx. 60 min	utes)			
Allocat	ion of p	olaces				
sensch matics with 18 gement Should dised p (50% o cants w numbe mester: succes: deratio the san	aft (Bu for Eco o ECTS t and E the nu procedu f place vith the r of sub s, place sfully c n. Plac ne proc	siness Management ar nomics) (BSc with 180 credits) as well as Bac conomics) (60 ECTS cre mber of applications e tre among all applicant s): total number of ECTS same number of ECTS oject semesters of the es will be allocated by ompleted at least one es on all courses of the redure. A waiting list w	ns with regard to availa and Economics) (BSc with ECTS credits), Wirtscha chelor's students with the edits). The remaining pl exceed the number of av- ts irrespective of their s S credits already achieved credits achieved, place respective applicant; ar- lot. Quota 3 (25% of pla module component of the e-module component with the maintained and p	h 180 ECTS credits), aftsinformatik (Busin he minor Wirtschafts aces will be allocate vailable places, plac ubjects according to ved in the respective es will be allocated b nong applicants with aces): allocation by l the respective modu ith a restricted numb	Wirtschaftsmathema ess Information Sys swissenschaft (Busir ed to students of oth es will be allocated i the following quota e degree subject; am by lot. Quota 2 (25% h the same number of ot. Applicants who a le will be given prefe per of places will be a	atik (Mathe- tems) (BSc ness Mana- er subjects. in a standar- s: Quota 1 ong appli- of places): of subject se lready have erential cons allocated in
Additio	nal inf	ormation				
Worklo	ad					
 	-					
Teachiı	ng cycl	e				
	1					
Referre	d to in	LPOI (examination regulati	ons for teaching-degree progra	mmes)		
		•				
Module			<b>C</b> : ( )			
Bachel	or' deg	ree (1 major) Computer	Science (2014)			
Bachelor's	with 1 ma	ior Mathematics (2014)	-	• generated 26-Aug-2024 • achelor (180 ECTS) Mathema	-	page 172 / 191

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Modul	e title				Abbreviation	
		d Finance. An Introducti	on		12-l&F-G-132-m01	
	e coord			Module offered by		
holder of the Chair of Business Management, Bar Finance		ement, Banking and	Faculty of Business	Management and Economics		
ECTS	1	od of grading	Only after succ. con	mpl. of module(s)		
5	1	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
and pr Outline 1. Prine 2. Fund 3. Prot 4. Prot 5. Prot 6. Cap Intend After c (i) to u proach (ii) to a (iii) to a	inciples e of syll ciples o damenta olems of olems of ital mar ed learn ompleti ndersta n; address budget leration	s of financial economics. abus: f financial mathematics al concepts f investment and finance f investment and finance f investment and finance ket and corporate finance <b>hing outcomes</b> ng the course "Principles nd the fundamentals in f the central problems in and calculate the optima	in one commodity w in one commodity w in many commoditie ing in Germany s of Investments and financial mathematic intertemporal allocat al useful life given sta	orld under certainty orld under uncertain s world under uncert Finance", the studer s and solve several p on given different ca tic and dynamic inve	tainty nts will be able problems, e.g. via the PV ap-	
Course	<b>es</b> (type, n	umber of weekly contact hours,	language — if other than Gei	man)		
V + Ü (	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		s <b>essment</b> (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		nation (approx. 60 minut	es)			
Alloca	tion of p	olaces				
sensch matics with 18 gemen Should dised   (50% c cants v numbe mester succes	naft (Bu: for Eco 30 ECTS at and Ed d the nu procedu of place with the er of sub rs, place ssfully c	siness Management and nomics) (BSc with 180 E credits) as well as Bach conomics) (60 ECTS cred mber of applications exc are among all applicants s): total number of ECTS same number of ECTS cr oject semesters of the res	Economics) (BSc wit CTS credits), Wirtscha elor's students with t its). The remaining pl ceed the number of av irrespective of their s credits already achier redits achieved, place spective applicant; ar t. Quota 3 (25% of pla odule component of t	h 180 ECTS credits), iftsinformatik (Busin he minor Wirtschafts aces will be allocate vailable places, plac ubjects according to ved in the respective es will be allocated b nong applicants with aces): allocation by l	elor's students of Wirtschaftswis- Wirtschaftsmathematik (Mathe- ness Information Systems) (BSc swissenschaft (Business Mana- ed to students of other subjects. es will be allocated in a standar- o the following quotas: Quota 1 e degree subject; among appli- by lot. Quota 2 (25% of places): h the same number of subject se- ot. Applicants who already have le will be given preferential consi-	

### Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

# Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 175 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title		Abbreviation				
Macroe	econom	ics 2			12-Mak2-G-132-mo	1
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Public Finance		Faculty of Business	Management and E	conomics
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Description: The lecture provides an introduction to long run or dynamic issues of macroeconomic theory and policy. Contents: 1. Phillips curve and dynamic model 2. Growth theory and policy 3. Microeconomic foundations of macroeconomics 4. Macroeconomic policy					licy.	
		to be provided by Chai ning outcomes	· •			
th theo tertemp nal con <b>Course</b> V + Ü (r <b>Methoo</b>	ry, they poral b seque s (type, r no infoi d of ass	ng the course "Makroö / know the microecono udget constraint of the nces of policy reforms b number of weekly contact hour mation on SWS (weekl cessment (type, scope, lang le for bonus)	mic foundations of moo government. Therefore by applying simple econ s, language – if other than Ger y contact hours) and co	dern macroeconomic they are able to disc nomic models. <sup>man)</sup> purse language avail	theory and underst cuss the growth and able)	and the in- distributio-
		nation (approx. 60 min	 utes)			
Allocat						
sensch matics with 18 gemen Should dised p (50% o cants w numbe mester succes deratio	aft (Bu for Eco to ECTS to ECTS t and E the nu procedu f place vith the r of sul s, place sfully c n. Plac	ices: 620. No restriction siness Management ar nomics) (BSc with 180 credits) as well as Bac conomics) (60 ECTS cre mber of applications e are among all applicant s): total number of ECTS same number of ECTS oject semesters of the r es will be allocated by l ompleted at least one es on all courses of the cedure. A waiting list wi	d Economics) (BSc with ECTS credits), Wirtscha helor's students with th edits). The remaining pl xceed the number of av s irrespective of their s S credits already achieve credits achieved, place espective applicant; ar ot. Quota 3 (25% of pla module component of the	n 180 ECTS credits), Iftsinformatik (Busin ne minor Wirtschafts aces will be allocate vailable places, plac ubjects according to ved in the respective s will be allocated b nong applicants with aces): allocation by b he respective modu th a restricted numb	Wirtschaftsmathema ess Information Sys- swissenschaft (Busin ed to students of oth- es will be allocated i the following quota e degree subject; am by lot. Quota 2 (25% in the same number of ot. Applicants who a le will be given prefe- per of places will be a	atik (Mathe- tems) (BSc ness Mana- er subjects. in a standar- s: Quota 1 ong appli- of places): of subject se- ilready have erential consi- allocated in
Additional information						
Worklo	ad					
Bachelor's	with 1 ma	jor Mathematics (2014)		• generated 26-Aug-2024 • e achelor (180 ECTS) Mathema		page 176 / 191

# Teaching cycle

**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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# Module appears in

Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Business Management and Economics (2013)

Bachelor' degree (1 major) Business Information Systems (2014)

Bachelor' degree (1 major) Business Information Systems (2013)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 177 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

ECTS         Method of grading         Only after succ. compl. of module(s)           5         numerical grade	Module	e title				Abbreviation	
Inductor of the Chair of Business Administration and Marketer         Faculty of Business Management and Economics           ECTS         Method of grading         Only after succ. compl. of module(s)           5         numerical grade         -           Duration         Module level         Other prerequisites           1: semester         undergraduate         -           Description         Inductor prerequisites         -           Description         In this module, students will acquire the theoretical foundations of market-oriented management will be explained and exemplified in the 5 classical steps: situation analysis, objectives, strategies, tools and control- ling. The course will focus not only on the behavioural approaches of consumer behaviour but also on industri- al purchasing behaviour. A case study introducing students to the fundamental principles of market research be sed on a conjoint analysis will provide students with deeper insights into the topic.           Outline of syllabus:         .         Marketing, entrepreneurship and business management         .           2. Explanations of consumer behaviour         .         .         .           3. Fundamentals of market research         .         .         .           4. Strategic marketing: market mestand participles of market research dives and exp. ed., Wiesbaden 2012.         .         .           4. Strategic marketing: market mestand anagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung; Ko zego	Introdu	iction t	o Market-Oriented Ma	nagement		12-Mark-G-132-m01	L
ting       Only after succ. compl. of module(s)         5       numerical grade	Module	e coord	inator		Module offered by		
numerical grade            Duration         Module level         Other prerequisites           is semester         undergraduate            Contents            Description         In this module, students will acquire the theoretical foundations of market-oriented management.           Content:            With the stakeholder approach as a starting point, the basic design of market-oriented management will be explained and exemplified in the s classical steps: situation analysis, objectives, strategies, tools and control-ling. The course will focus not only on the behavioural approaches of consumer behaviour but also on industrial purchasing behaviour. A case study introducing students to the fundamental principles of market research bead on a conjoint analysis will provide students with deeper insights into the topic.           Outline of syllabus:        Marketing, entrepreneurship and business management           2. Explanations of consumer behaviour	holder of the Chair of Business Admin		Chair of Business Admi	nistration and Marke-	Faculty of Business	Management and E	conomics
Duration         Module level         Other prerequisites           is semester         undergraduate	ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
is semester       undergraduate          Contents       Description         In this module, students will acquire the theoretical foundations of market-oriented management.         Content:       With the stakeholder approach as a starting point, the basic design of market-oriented management will be explained and exemplified in the 5 classical steps: situation analysis, objectives, strategies, tools and control- ing. The course will focus not only on the behavioural approaches of consumer behaviour but also on industri- al purchasing behaviour. A case study introducing students to the fundamental principles of market research be sed on a conjoint analysis will provide students with deeper insights into the topic.         Outline of syllabus:       1.         1. Marketing, entrepreneurship and business management       2.         2. Explanations of consumer behaviour       3.         3. Fundamentals of market research       4.         4. Strategic marketing; marketing tools       5.         5. Corporate social responsibility versus creating shared value       Reading:         Robuburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, ath revised and exp. ed., Wiesbaden 2012.         Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, ard ed., Wiesbaden, 2012.         Merbert, H. / Burman, Ch / Kirchgeorg, M.: Marketing Grundlagen marktorientierter Unternehmensführung; stokeker, ch.: Intermationales Marketing-Management Ein markenorientie	5	nume	rical grade				
Contents           Description           In this module, students will acquire the theoretical foundations of market-oriented management.           Content:           With the stakeholder approach as a starting point, the basic design of market-oriented management will be explained and exemplified in the 5 classical steps: situation analysis, objectives, strategies, tools and controling. The course will focus not only on the behavioural approaches of consumer behaviour buils on industrial purchasing behaviour. A case study introducing students to the fundamental principles of market research builts of consumer behaviour builts.           Outline of syllabus:         Marketing, entrepreneurship and business management           2. Explanations of consumer behaviour         Strategic marketing; marketing tools           5. Corporate social responsibility versus creating shared value         Reading:           Roscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed.           Miterbemensführung, 4th revised and exp. ed., Wiesbaden 2012.           Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung; 4th revised and exp. ed., Wiesbaden 2012.           Horber-Riel, W. / Weinberg, P.: Konsumentenverhalten, 9th ed., Munich 2009.           Weffert, H. / Burman, Ch / Kirchgeorg, M.: Marketing - Grundlagen marktorientierter Unternehmensführung; Ko zepte Instrumente - Praxisbeispiele, Instrumente - Praxisbeispiele, Instrumente - Praxisbeispiele, Instrumente - Praxisbeispiele, Insthreised and exp. ed., Wiesbaden 202.	Duratio	on	Module level	Other prerequisites	i		
Description In this module, students will acquire the theoretical foundations of market-oriented management. Content: With the stakeholder approach as a starting point, the basic design of market-oriented management will be ex- plained and exemplified in the 5 classical steps: situation analysis, objectives, strategies, tools and control- ling. The course will focus not only on the behavioural approaches of consumer behaviour but also on industri- al purchasing behaviour. A case study introducing students to the fundamental principles of market research be sed on a conjoint analysis will provide students with deeper insights into the topic. Outline of syllabus: 1. Marketing, entrepreneurship and business management 2. Explanations of consumer behaviour 3. Fundamentals of market research 4. Strategic marketing; marketing tools 5. Corporate social responsibility versus creating shared value Reading: Foscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed Wiesbaden 2011. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3rd ed., Wiesbaden, 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3rd ed., Wiesbaden, 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3rd ed., Wiesbaden, 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3rd ed., Wiesbaden, 2012. Koeber- Ricl, W. / Weinberg, P.:: Konsumentenverhalten, 9th ed., Munich 2009. Meffert, H. / Burman, Ch. / Kirchgeorg, M.: Marketing Grundlagen marktorientierter Unternehmensführung; Ko zepte Instrument Praxibelspiejeie, Inst thr evised and exp. ed., Wiesbaden 1995. Porter, M. E.: Wettbewerbsvorteile Spitzenleistungen erreichen und behaupten, 8th ed., Campus Frankfurt	1 seme	ster	undergraduate				
In this module, students will acquire the theoretical foundations of market-oriented management. Content: With the stakeholder approach as a starting point, the basic design of market-oriented management will be ex- plained and exemplified in the 5 classical steps: situation analysis, objectives, strategies, tools and control- ling. The course will focus not only on the behavioural approaches of consumer behaviour but also on industri- al purchasing behaviour. A case study introducing students to the fundamental principles of market research by seed on a conjoint analysis will provide students with deeper insights into the topic. Outline of syllabus: 1. Marketing, entrepreneurship and business management 2. Explanations of consumer behaviour 3. Fundamentals of market research 4. Strategic marketing: marketing tools 5. Corporate social responsibility versus creating shared value Reading: Foscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed Wiesbaden 2011. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, aft revised and exp. ed., Wiesbaden 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, ard ed., Wiesbaden, 2012a. Kroeber-Niel, W. /Weinberg, P.: Konsumentenverhalten, 9th ed., Munich 2009. Weffert, H. / Burman, Ch / Kirchgeorg, M.: Marketing - Grundlagem marktorientierter Unternehmensführung: Ko zepte Instrumente Praxisbeispiele, 11th revised and exp. ed., Wiesbaden 2012. Meffert, H. / Burman, Ch / Secker, Ch.: Internationales Marketing-Management - Ein markenorientierter Ansatz 4th ed., Stuttgart 2010. Meyer, M.: Ökonomische Organisation der Industrie: Netzwerkarrangements zwischen Markt und Unternehmun Wiesbaden 1995. Simon, H. / Fassnacht, M.: Preismanagement, Strategie Analyse Entscheidung Umsetzung, 3rd ed., Wies- baden 2009. Intendel learning outcomes The	Conten	ts					
<ul> <li>Ing. The course will focus not only on the behavioural approaches of consumer behaviour but also on industrial purchasing behaviour. A case study introducing students to the fundamental principles of market research besed on a conjoint analysis will provide students with deeper insights into the topic.</li> <li>Outline of syllabus:         <ul> <li>I. Marketing, entrepreneurship and business management</li> <li>Explanations of consumer behaviour</li> <li>Fundamentals of market research</li> <li>Strategic marketing; marketing tools</li> <li>Corporate social responsibility versus creating shared value</li> </ul> </li> <li>Reading:         <ul> <li>Foscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed.</li> <li>Wiesbaden 2011.</li> <li>Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3th revised and exp. ed., Wiesbaden 2012.</li> <li>Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3th ded., Wiesbaden, 2012a.</li> </ul> </li> <li>Kroeber-Riel, W. / Weinberg, P.: Konsumenterwerhalten, 9th ed., Munich 2009.</li> <li>Meffert, H. / Burman, Ch / Kirchgeorg, M.: Marketing - Grundlagen marktorientierter Unternehmensführung: Kozepte Instrumente Praxisbeispiele, 11th revised and exp. ed., Wiesbaden 2012.</li> <li>Meffert, H. / Burman, Ch / Becker, Ch.: Internationales Marketing-Management Ein markenorientierter Ansatz 4th ed., Stuttgart 2010.</li> </ul> <li>Meyer, M. E: Wettbewerbsvorteile Spitzenleistungen erreichen und behaupten, 8th ed., Campus Frankfurt / New York 2014. (Original: Porter, M.: Competitive Advantage, New York 1985.)</li> <li>Simon, H. / Fassnacht, M.: Preismanagement, Strategie Analyse Entscheidun</li>	In this Conten With th	module t: e stake	cholder approach as a s	starting point, the basi	c design of market-o	riented managemen	
<ul> <li>Marketing, entrepreneurship and business management</li> <li>Explanations of consumer behaviour</li> <li>Fundamentals of market research</li> <li>Strategic marketing; marketing tools</li> <li>Corporate social responsibility versus creating shared value</li> </ul> Reading: Foscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed Wiesbaden 2011. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, ath revised and exp. ed., Wiesbaden 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, and ed., Wiesbaden, 2012a. Kroeber-Riel, W. /Weinberg, P.: Konsumentenverhalten, 9th ed., Munich 2009. Meffert, H. / Burman, Ch / Kirchgeorg, M.: Marketing Grundlagen marktorientierter Unternehmensführung: Kozeber-Riel, W. /Weinberg, P.: Konsumentenverhalten, 9th ed., Wiesbaden 2012. Meffert, H. / Burman, Ch / Becker, Ch.: Internationales Marketing-Management Ein markenorientierter Ansatz 4th ed., Stuttgart 2010. Meyer, M.: Ökonomische Organisation der Industrie: Netzwerkarrangements zwischen Markt und Unternehmung Wiesbaden 1995. Porter, M. E.: Wettbewerbsvorteile Spitzenleistungen erreichen und behaupten, 8th ed., Campus Frankfurt / New York 2014. (Original: Porter, M.: Competitive Advantage, New York 1985.) Simon, H. / Fassnacht, M.: Preismanagement, Strategie Analyse Entscheidung Umsetzung, 3rd ed., Wiesbaden 2009. Intended learning outcomes The students have a basic understanding of business management and are able to classify the knowledge systematically. In addition, they can use the acquired knowledge solve and identify the conventional problem fields: business management. Courses (type, number of weekly contact hours, language if other than German) V	ling. Th al purc	ie cours hasing	se will focus not only of behaviour. A case stuc	n the behavioural appr ly introducing students	oaches of consumer to the fundamental	behaviour but also oprinciples of market	on industri-
Foscht, T. / Swoboda, B.: Käuferverhalten: Grundlagen Perspektiven Anwendungen, 4th revised and exp. ed Wiesbaden 2011. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 4th revised and exp. ed., Wiesbaden 2012. Homburg, Ch.: Grundlagen des Marketingmanagements: Einführung in Strategie, Instrumente, Umsetzung und Unternehmensführung, 3rd ed., Wiesbaden, 2012a. Kroeber-Riel, W. /Weinberg, P.: Konsumentenverhalten, 9th ed., Munich 2009. Meffert, H. / Burman, Ch / Kirchgeorg, M.: Marketing Grundlagen marktorientierter Unternehmensführung: Korzepte Instrumente Praxisbeispiele, 11th revised and exp. ed., Wiesbaden 2012. Meffert, H. / Burman, Ch / Becker, Ch.: Internationales Marketing-Management Ein markenorientierter Ansatz 4th ed., Stuttgart 2010. Meyer, M.: Ökonomische Organisation der Industrie: Netzwerkarrangements zwischen Markt und Unternehmun Wiesbaden 1995. Porter, M. E.: Wettbewerbsvorteile Spitzenleistungen erreichen und behaupten, 8th ed., Campus Frankfurt / New York 2014. (Original: Porter, M.: Competitive Advantage, New York 1985.) Simon, H. / Fassnacht, M.: Preismanagement, Strategie Analyse Entscheidung Umsetzung, 3rd ed., Wies- baden 2009. Intended learning outcomes The students have a basic understanding of business management and are able to classify the knowledge system matically. In addition, they can use the acquired knowledge solve and identify the conventional problem fields business management. Courses (type, number of weekly contact hours, language if other than German) V + Ü (no information on SWS (weekly contact hours) and course language available) achelor's with 1 major Mathematics (2014) MUWürzburg • generated 26-Aug-2024 • exam. reg.	1. Mark 2. Expla 3. Fund 4. Strat	eting, e anatior lament tegic m	entrepreneurship and b is of consumer behavio als of market research arketing; marketing too	bls	lue		
Intended learning outcomes The students have a basic understanding of business management and are able to classify the knowledge systematically. In addition, they can use the acquired knowledge solve and identify the conventional problem fields business management. Courses (type, number of weekly contact hours, language – if other than German) V + Ü (no information on SWS (weekly contact hours) and course language available) achelor's with 1 major Mathematics (2014) JMU Würzburg • generated 26-Aug-2024 • exam. reg. page 178 / 192	Foscht, Wiesba Hombu Untern Kroebe Meffert zepte Meffert 4th ed. Meyer, Wiesba Porter, New Yo Simon,	, T. / Sw aden 2c urg, Ch. ehmen: urg, Ch. ehmen: r-Riel, N c, H. / B - Instru c, H. / B , Stuttg M.: Ök aden 19 M. E.: N ork 2014 H. / Fa	911. : Grundlagen des Mark sführung, 4th revised a : Grundlagen des Mark sführung, 3rd ed., Wies N. /Weinberg, P.: Kons urman, Ch / Kirchgeorg mente Praxisbeispiel urman, Ch / Becker, Ch gart 2010. onomische Organisatio 95. Nettbewerbsvorteile 4. (Original: Porter, M.:	etingmanagements: Ein and exp. ed., Wiesbade etingmanagements: Ein abaden, 2012a. umentenverhalten, 9th g, M.: Marketing Grun e, 11th revised and exp n.: Internationales Marl on der Industrie: Netzw Spitzenleistungen erre Competitive Advantage	nführung in Strategie n 2012. nführung in Strategie ed., Munich 2009. idlagen marktorienti o. ed., Wiesbaden 20 keting-Management erkarrangements zw ichen und behaupte e, New York 1985.)	e, Instrumente, Umse e, Instrumente, Umse erter Unternehmenst 12. Ein markenorientie ischen Markt und Ur n, 8th ed., Campus F	etzung und etzung und führung: Kor erter Ansatz hternehmun Frankfurt /
The students have a basic understanding of business management and are able to classify the knowledge systematically. In addition, they can use the acquired knowledge solve and identify the conventional problem fields business management.  Courses (type, number of weekly contact hours, language — if other than German) V + Ü (no information on SWS (weekly contact hours) and course language available)  achelor's with 1 major Mathematics (2014)  JMU Würzburg • generated 26-Aug-2024 • exam. reg.  page 178 / 192			ning outcomes				
Courses (type, number of weekly contact hours, language — if other than German)         V + Ü (no information on SWS (weekly contact hours) and course language available)         achelor's with 1 major Mathematics (2014)       JMU Würzburg • generated 26-Aug-2024 • exam. reg.	The stu matica	idents l lly. In a	have a basic understan ddition, they can use t				
achelor's with 1 major Mathematics (2014) JMU Würzburg • generated 26-Aug-2024 • exam. reg. page 178 / 19:	_		-	s, language — if other than Ge	rman)		
	V + Ü (r	no infoi	rmation on SWS (weekl	y contact hours) and co	ourse language avail	able)	
	Bachelor's	with 1 ma	or Mathematics (2014)	-		-	page 178 / 191

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

# Allocation of places

Number of places: 620. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics) (BSc with 180 ECTS credits), Wirtschaftsmathematik (Mathematics for Economics) (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) (BSc with 180 ECTS credits) as well as Bachelor's students with the minor Wirtschaftswissenschaft (Business Management and Economics) (60 ECTS credits). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standar-dised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

#### Additional information

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### Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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### Module appears in

Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Business Management and Economics (2013)

Bachelor' degree (1 major) Business Information Systems (2014) Bachelor' degree (1 major) Business Information Systems (2013)

Module	e title				Abbreviation
Microe	Microeconomics 2				12-Mik2-G-132-m01
Module	Module coordinator			Module offered by	
holder of the Chair of Industrial Economics		mics	Faculty of Business Management and Economics		
ECTS	Methe	od of grading	Only after succ. cor	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	its				

### Outline of syllabus:

- 1. Cost minimisation
- 2. Profit maximisation and the supply function
- 3. Short-run market equilibrium
- 4. Long-run market equilibrium
- 5. Government interventions
- 6. Monopoly
- 7. Pricing strategies with market power
- 8. Introduction to game theory
- 9. Strategic interaction and oligopoly

### Intended learning outcomes

The aim of the course is to understand how markets work. We will investigate the behavior of a company in different market structures; namely perfectly competitive markets, monopoly markets and all forms in between, the so-called oligopoly markets. Ultimately, we are interested in whether the market results from a social point of view is desirable. Using our models, we will also try to analyze the consequences of different government interventions. The knowledge that students gain in this course will be in their future course of studies of benefits to them. In almost all business and economics lectures markets play a role. It also discussed in detail how economic actors make their decisions. Students will thus learn the important building blocks of economic thought. This knowledge will also be useful in the workplace and even in their private lives.

**Courses** (type, number of weekly contact hours, language – if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

Language of assessment: German, English

### **Allocation of places**

Number of places: 620. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics) (BSc with 180 ECTS credits), Wirtschaftsmathematik (Mathematics for Economics) (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) (BSc with 180 ECTS credits) as well as Bachelor's students with the minor Wirtschaftswissenschaft (Business Management and Economics) (60 ECTS credits). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standar-dised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

Bachelor's with 1 major Mathematics (2014)

# Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

# Module appears in

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 181 / 191
	data record Bachelor (180 ECTS) Mathematik - 2014	

Module title				Abbreviation	
Princip	oles of I	Economic Policy			12-WiPo-G-132-m01
Modul	e coord	inator		Module offered by	
holder	ofthe	Chair of Economic Ord	er and Social Policy	Faculty of Business	Management and Economics
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade		-	
Durati	on	Module level	Other prerequisite	S	
1 seme	ester	undergraduate			
Conter	nts		I		
to the with the Wirtscl croeco possib Outline 1. Intro - What - Objec - Instru - Reasc - Cure 3. Price - Cure - Cure	urse co term "e e object haft" (" nomic of le prob e of syll oduction is "Econ ctives o unents utions o e neploy rics: Th ons for for labce e level s rics: Infor for price ontradi iness cy rics: cu ons for for mace ince in for insta- ons for for insta-	conomic policy" and c ctives that are set out Law for Promoting Sta data to evaluate the d lems and demonstrat abus: nomic Policy"? f economic policy of economic policy ment e status quo of the lak unemployment our market problems stability lation, deflation or pri inflation and deflatior e instability cting relationship betry cycles and economic gr rrent situation of the v cyclical fluctuations a roeconomic instabiliti foreign trade lances of payments of macroeconomic imba abilities in foreign trace tribution e distribution of incom an increase in income juality and redistributi	liscusses its objectives in the German "Gesetz bility and Growth of the egree to which the part es actions the governm oour market ce stability? ween full employment a owth vorld economy and long nd determinants of ecc ies and means to facilit Germany, Europe and lances de mes and its historical de inequality	and stable prices g-term ecnomoic growth cate economic growth the World	
	-	ning outcomes			
on a n veridge learn t vernme	umber o e curve, o asses ental in	of macroeconomic mo , etc.), students study s in which situations terventions may be ha	dels (AS/AD, IS/LM, ph the abilitiy of the state such influence can be v armful. After successful	illips curve, labor ma to influence national welfare-enhancing and completion of the co	international economies. Based rket equilibria, Solow model, Be- and global economies. Students d under which circumstances go- urse, students are able to analy- ddition, students have learned to

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bachelor S with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 182 / 191	
	data record Bachelor (180 ECTS) Mathematik - 2014		

assess the situation of a country on the basis of empirical macroeconomic data and to explain the particular problems based on different models.

**Courses** (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

### Allocation of places

Number of places: 620. No restrictions with regard to available places for Bachelor's students of Wirtschaftswissenschaft (Business Management and Economics) (BSc with 180 ECTS credits), Wirtschaftsmathematik (Mathematics for Economics) (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) (BSc with 180 ECTS credits) as well as Bachelor's students with the minor Wirtschaftswissenschaft (Business Management and Economics) (60 ECTS credits). The remaining places will be allocated to students of other subjects. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. Applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. Places on all courses of the module component with a restricted number of places will be allocated in the same procedure. A waiting list will be maintained and places re-allocated as they become available.

### Additional information

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Workload

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**Teaching cycle** 

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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### Module appears in

Bachelor's with 1 I	major Mathematics	(2014)
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# Thesis

(11 ECTS credits)

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Module title Abbreviation					Abbreviation
Thesis Mathematics (Bachelor Thesis)       10-M-BAM-122-m01					10-M-BAM-122-m01
Module coordinator M				Module offered by	I
Dean o	of Studi	es Mathematik (Math	ematics)	Institute of Mathen	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
11	nume	rical grade	Where applicable, s supervisor.	pecific modules/mc	dule components as specified by
Duratio	on	Module level	Other prerequisites	i	
1 seme	ster	undergraduate			
Conten	Its				
Indepe	ndentl	y researching and writ	ting on a topic in mather	natics selected in co	nsultation with the supervisor.
Intend	ed lear	ning outcomes			
	during	his/her studies in the			pply the skills and methods ob- vn the result of his/her work in a
Course	<b>S</b> (type, 1	number of weekly contact ho	urs, language — if other than Ge	rman)	
no cou	rses as	signed			
		<b>sessment</b> (type, scope, la ble for bonus)	nguage — if other than German,	examination offered — if no	ot every semester, information on whether
written Langua			English if agreed upon w	vith the examiner	
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013)					



# Subject-specific Key Skills

(16 ECTS credits)

Bachelor's with 1 major Mathematics (2014)	JMU Würzburg • generated 26-Aug-2024 • exam. reg.	page 186 / 191
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Module	Module title Abbreviation				
Compu	Computational Mathematics 10-M-COM-131-m01				
Module coordinator Module offere			Module offered by		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
4	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
merica and 10-	l compi -M-LNA	utation (e. g. Matlab) to s	upplement the basic ution of problems in I	modules in analysis	Mathematica or Maple) and nu- s and linear algebra (10-M-ANA-G etry, analysis, in particular diffe-
Intend	ed lear	ning outcomes			
		arns the use of advanced cation to solve mathemat		cal software package	es, and is able to assess their
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
1) Ü + V	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
		form of programming exe ssessment: German, Eng		120 minutes)	
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
	Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2014)				

Module title Abbreviation					Abbreviation	
Program	Programming course for students of Mathematics and other subjects 10-M-PRG-131-mo1					
Module coordinator Module offe					lby	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathematics		
ECTS	Meth	od of grading	Only after succ. com	pl. of module(s	)	
3	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Basics	of a m	odern programming langı	uage (e.g.C).			
Intende	ed lear	ning outcomes				
The stu in math			ntly on small program	ming exercises	and standard programming problems	
Course	<b>S</b> (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no ir	forma	tion on SWS (weekly cont	act hours) and cours	e language avail	lable)	
		s <b>essment</b> (type, scope, langua ole for bonus)	ge — if other than German, e	examination offered -	<ul> <li>if not every semester, information on whether</li> </ul>	
		form of programming exe ssessment: German, Eng		120 minutes)		
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad		·			
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	appea	ars in				
	-	ree (1 major) Mathematic ree (1 major) Computatio	-	14)		

Module title Abbreviation					
Basic Notations and Methods of Mathematical Reasoning 10-M-GBM-131-m01					
Module coordinator Module offer					I
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathen	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
2		successfully completed			
Duratio	'n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts	•			
Introdu	ction t	o the basic notions and p	proof techniques in m	athematics: approa	ch to sets, formal logic and maps.
Intende	ed lear	ning outcomes			
	•	ets acquainted with the b s degree study programm	-	ues which are prere	quisites for the further courses in
Course	<b>S</b> (type, 1	number of weekly contact hours, I	anguage — if other than Gei	rman)	
V + Ü (r	no info	rmation on SWS (weekly	contact hours) and co	ourse language avai	able)
		<b>sessment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		nment (approx. 60 to 120 assessment: German, Eng			
Allocat	ion of	places			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
-					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
		ree (1 major) Mathematic	s (2014)		
Bachel	or' deg	ree (1 major) Computatio	nal Mathematics (20	14)	

Module	Module title Abbreviation					
Reasoning and Writing in Mathematics 10-M-ASM-131-m01					10-M-ASM-131-m01	
Module coordinator Module offered by						
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
	ical wri				in mathematics as well as ma- approach to axiomatic and de-	
Intend	ed lear	ning outcomes				
	asy mat				nematics. He/She is able to per- y and reasonably in written and	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (I	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		ment (approx. 60 to 120 ssessment: German, Eng				
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			
Bachel	Bachelor' degree (1 major) Computational Mathematics (2014)					

Module title				Abbreviation	
Seminar Mathematics				10-M-SEM-131-m01	
Module coordinator				Module offered by	
Dean of	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
A selec	ted top	ic in mathematics.			
Intende	ed learr	ning outcomes			
of a giv	en topi	•	•	-	sters elaboration and structuring /She is able to participate active-
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	a)
		<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
talk (ap	prox. 6	o to 120 minutes)			
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Mathematics (2014)					
Bachelor' degree (1 major) Computational Mathematics (2014)					