

# Module Catalogue

for the Subject

## Biomedicine

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

> Examination regulations version: 2020 Responsible: Faculty of Medicine Responsible: Faculty of Biology

JMU Würzburg • generated 29-Jun-2025 • exam. reg. data record 82|300|-|-|H|2020

### Julius-Maximilians-UNIVERSITÄT WÜRZBURG

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## The subject is divided into

section / sub-section	FCTS credits	starting
Section / Sub-Section		page
Compulsory Courses	115	8
Modules Biology	20	9
Modules Chemistry	12	16
Modules Physics	10	19
Modules Mathematics/Statistics	5	32
Modules Biochemistry and Molecular Biology	20	34
Modules Anatomy and Pathology	15	37
Modules Physiology	10	41
Modules Pharmacology and Toxicology	5	44
Modules Microbiology, Virology and Immunology	10	46
Modules Advanced Lab Course	8	50
Compulsory Electives	30	52
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tics		53
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Key Skills Area	20	77
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Subject-specific Key Skills	15	79
Thesis	15	104

## **Learning Outcomes**

German contents and learning outcome available but not translated yet.

### Wissenschaftliche Befähigung

- Die Absolventen/-innen können Experimente nach Anleitung durchführen, analysieren, interpretieren und die Ergebnisse fachlich diskutieren.
- Die Absolventen/-innen sind in der Lage, Problemanalysen durchzuführen und Problemlösungen zu entwickeln.
- Die Absolventen/-innen sind in der Lage, Fachliteratur adäquat zu verstehen, in den naturwissenschaftlichen Kontext einzuordnen und kritisch zu hinterfragen.
- Die Absolventen/-innen erwerben Grundwissen. in den naturwissenschaftlichen Kernfächern Biologie, Physik, Chemie, Mathematik in der Vorklinik mit den Fächern, Anatomie, Physiologie und Biochemie. im klinisch-theoretischen Bereich der Humanmedizin mit den Fächern Infektiologie, Immunologie, Pharmakologie, Neurobiologie, Humangenetik, Pathologie. Sie sind so in der Lage, interdisziplinäre Verknüpfungen herzustellen.
- Die Absolventen/-innen erlernen experimentelle Methoden der Biochemie, Bioinformatik, Molekularbiologie sowie der Bioanalytik.
- Die Absolventen/-innen sind in der Lage, Fachliteratur adäquat zu verstehen und nach Anleitung neue Experimente und Lösungsansätze zu entwickeln und diese vor Fachpublikum zu präsentieren.
- Die Absolventen/-innen besitzen die Fähigkeit, theoretisch erlerntes Wissen in der Praxis anzuwenden und eigenständig Experimente zu entwickeln.
- Die Absolventen/-innen lernen, organsiert und strukturiert den naturwissenschaftlichen Grundprinzipien folgend, zu arbeiten und praktische Experimente in Schriftform und als Präsentation darzustellen.

### Befähigung, eine qualifizierte Erwerbstätigkeit aufzunehmen

- Die Absolventen/-innen sind in der Lage, theoretisches Wissen in der Praxis anzuwenden.
- Die Absolventen/-innen können Probleme erkennen und dazu eigene Lösungsansätze entwickeln.
- Die Absolventen/-innen können ihr naturwissenschaftliches Wissen und die Praxisarbeit in Schriftform und Präsentationen darstellen und konstruktive Kritik umsetzen.
- Die Absolventen/-innen sind in der Lage, Englisch als Wissenschaftssprache anzuwenden.
- Die Absolventen/-innen sind in der Lage, wissenschaftlich eigenständig zu arbeiten.
- Die Absolventen/-innen können praktische Aufgaben nach Anleitung durchführen, analysieren, interpretieren und anschließend diskutieren.

### Befähigung zum gesellschaftlichen Engagement

- Die Absolventen/-innen sind in der Lage, naturwissenschaftliche Fachliteratur sowie die neusten Entwicklungen der Forschung kritisch zu reflektieren, in den aktuellen Kontext einzuordnen sowie Auswirkungen auf gesellschaftliche Bereiche wie Umwelt, Wirtschaft etc. zu erkennen und zu diskutieren.
- Die Absolventen/-innen haben sich Wissen auch außerhalb ihres Fachgebietes angeeignet, tauschen sich mit fachfremden Kommilitonen und Dozierenden aus und können begründet Position zu gesellschaftlichen, kulturellen etc. Fragestellungen nehmen.
- Die Absolventen/-innen sind in der Lage, ethische Fragestellungen zum Thema Tierversuche zu reflektieren sowie zu diskutieren.
- Die Absolventen/-innen entwickeln die Motivation und Fähigkeit, eigene Ideen in partizipative Prozesse einzubringen und zu diskutieren.
- Die Absolventen/-innen können ihre erworbenen Kompetenzen anwenden.

### Persönlichkeitsentwicklung

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- Die Absolventen/-innen kennen die Regeln guten wissenschaftlichen Arbeitens und befolgen diese.
- Die Absolventen/-innen erlernen Eigenorganisation und Zeitmanagement.

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- Die Absolventen/-innen erlernen die Fähigkeit, im Team zu kommunizieren und zu arbeiten.
- Die Absolventen/-innen erlernen das eigenständige wissenschaftliche Arbeiten sowie die Fähigkeit, ihre Ergebnisse zu reflektieren, mit anderen Positionen zu vergleichen und zu diskutieren.
- Die Absolventen/-innen übernehmen die Verantwortung für ihr Handeln.

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### 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:

### ASPO2015

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

### 24-Mar-2020 (2020-24)

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**

(115 ECTS credits)

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## Modules Biology

(20 ECTS credits)

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Module	e title				Abbreviation
Basics of Biology - From Cells to Organisms			07-ZEORG-152-m01		
Module coordinator				Module offered by	
Dean o	f Studi	es Biologie (Biology)		Faculty of Biology	
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	Admission prerequis exercises (minimum exercises (approx. 2 sessment.	site to assessment: 80%) and successf 5 to 30 hours) are p	exercises. Regular attendance of ful completion of the respective rerequisites for admission to as-
Conten	ts				
The firs cal cate ting wit ference plants) and hyp thods. to the p will acc organis tents of so acqu <b>Intende</b> Knowle ge of th and pla with the racteris and ani functio by light	The first part of the course will acquaint students with the elementary building blocks of life as well as biologi- cal categories. Building on this knowledge, the course will then discuss the cell, the smallest unit of life, star- ting with its macroscopic structure before moving on to its microscopic structure. The course will point out dif- ferences and similarities between prokaryotic cells (bacteria, archaebacteria) and eukaryotic cells (animals, plants). The second part will address one of the central issues of biology: evolution. Fundamental mechanisms and hypotheses will be discussed and students will be introduced to major phylogenetic reconstruction me- thods. Using the examples of plants and animals, the subsequent module components will introduce students to the phylogenetic diversity of eukaryotes. At the level of groups in the plant and animal kingdoms, students will acquire the fundamental knowledge necessary to understand the forms and functions of animal and plant organisms, with morphology and cytology being discussed in an evolutionary and ecological context. The con- tents of the module are relevant for biological disciplines at all levels of biological organisation. Students will al- so acquire and practise some of the fundamental preparation skills bioscientists are often required to possess. <b>Intended learning outcomes</b> Knowledge of the structures of prokaryotic and eukaryotic cells and their (biological) macromolecules. Knowled- ge of the specific characteristics of the intracellular and extracellular structures of prokaryotes as well as animal and plant cells. Ability to recognise evolution as the driving force behind the phylogeny of species. Familiarity with the concepts of phylogenetic relationships between plants/animals. Familiarity with the distinguishing cha racteristics and major representatives of groups in the plant and animal kingdoms. Ability to select those plant and animal organisms that are most suitable for particular scientific issues. Familiarity with the components an				blocks of life as well as biologi, the smallest unit of life, star- e. The course will point out dif- nd eukaryotic cells (animals, tion. Fundamental mechanisms logenetic reconstruction me- bonents will introduce students nd animal kingdoms, students d functions of animal and plant nd ecological context. The con- cal organisation. Students will al- s are often required to possess. gical) macromolecules. Knowled- of prokaryotes as well as animal ylogeny of species. Familiarity iarity with the distinguishing cha- ms. Ability to select those plant niliarity with the components and opic and histologic preparations
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (1.5) -	+ V (1.5	) + V (2) + Ü (3)			
Methoo module is	<b>d of ass</b> creditab	<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
written credita	exami ble for	nation (approx. 60 minut bonus	es)		
Allocation of places					
Additional information					
Worklo	ad				
210 h					
Teachi	ng cycl	e			

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

#### Module appears in

Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Biomedicine (2020)

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	data record Bachelor (180 ECTS) Biomedizin - 2020	1

Module	title				Abbreviation
Physiology of Organisms			07-PHYORG-152-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)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Admission prerequis exercises (minimum exercises (approx. 2 sessment.	site to assessment: 6 80%) and successf 5 to 30 hours) are pr	exercises. Regular attendance of ul completion of the respective rerequisites for admission to as-
Conten	ts				
This mo and wil ratory. metabo environ	dule w l provio The mo plic divo ment c	All acquaint students wit de them with an opportur dule will first address the ersity. Subsequently, the of multicellular organisms	h the principles of the hity to develop the fun e biochemistry of the module will discuss s such as plants and a	e general and compand ndamental skills for cell and will then m the physiological pro animals.	arative physiology of organisms working in a physiological labo- ove on to discuss prokaryotic ocesses that regulate the internal
Intende	ed leari	ning outcomes			
Studen ve acqu	ts have iired fu	e developed an understar ndamental knowledge o	nding of the physiolog n planning, setup, int	gical functions and r erpretation and pres	egulation of organisms. They ha- sentation of scientific results.
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + \	/ (1) + \	/ (1) + Ü (2)			
Methoo module is	<b>l of ass</b> creditab	e <b>ssment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written credital	examiı ble for	nation (approx. 60 minut bonus	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	irs in			
Bachelo	or's de or's de or's de	gree (1 major) Biomedicir gree (1 major) Biomedicir gree (1 major) Biomedicir	ne (2015) ne (2018) na (2020)		
васпец	Bachelor's degree (1 major) Biomedicine (2020)				

Module title			Abbreviation		
Genetics and Neurobiology			07-GENEU-152-m01		
Module	e coord	inator		Module offered by	
holder	ofthe	Chair of Neurobiology and	d Genetics	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	Admission prerequisite to assessment: exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.		
Conten	ts				
Fundar	nental	principles of genetics and	d neurobiology.		
Intende	ed lear	ning outcomes			
Studen volved heritan	its will in anin ice.	understand that there are nal behaviour and will be	e molecular, cellular a able to relate anima	and system biologica I behaviour to the mo	al mechanisms and processes in- olecular and formal bases of in-
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (1.5)				
Metho module is	<b>d of ass</b> s creditab	<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 credita	exami ble for	nation (60 to 90 minutes) bonus	)		
Allocat	ion of <sub>l</sub>	olaces			
Additio	onal inf	ormation			
Worklo	ad				
120 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	Bachelor's degree (1 major) Biomedicine (2015)				
Bachel	Bachelor's degree (1 major) Biomedicine (2018)				
Bachelor's degree (1 major) Biomedicine (2020)					

Module	e title				Abbreviation	
Developmental Biology of Animals			07-3A3EBIOTI-152-r	n01		
Module coordinator			Module offered by			
Dean o	f Studi	es Biologie (Biology)		Faculty of Biology		
ECTS	Metho	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	Admission prerequi (minimum 80%) and	site to assessment: d successful comple	exercises. Regular at tion of exercises (ap	tendance prox. 25 to
Conten	tc					
In this biology bians, f of sper organo insects	module v. The fo nemato matozo genesi ), eco-o	e, students will acquire ollowing topics will be c odes, Drosophila, mous oa and ova), differential s, pattern formation, ca devo, evo-devo.	theoretical and practic overed: early embryon e) and relevance for th gene expression, cell rcinogenesis, stem cel	al background know ic development of v e systematics of ani growth and molecula l research and clonii	vledge on animal dev arious model organis mals, gametogenesi ar regulation of cell o ng, metamorphosis (	velopmental sms (amphi- s (production development, (amphibians,
Intende	ed lear	ning outcomes				
1. Fund model discipli don, ca 7. Phys	amenta organis inary co incer a iologic	al concepts in developn sms (pattern formation) onnections between dev nd stem cells as well as al aspects of the develo	nental biology. 2. Emb . 3. Molecular mechani velopmental biology ar gametes. 6. Interrelat opmental processes di	ryonic and postembr isms as well as contr nd other branches of ions between ontoge scussed.	yonic development of rol of cell developme biology. 5. Cell biolo eny and evolution/er	of selected ent. 4. Inter- ogy of cotyle- nvironment.
Course	<b>S</b> (type, r	number of weekly contact hours	, language — if other than Gei	rman)		
V (1) +	Ü (3)					
Methoo module is	<b>d of ass</b> creditab	<b>sessment</b> (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
written credita	exami ble for	nation (approx. 60 minu bonus	utes)			
Allocat	ion of <sub>l</sub>	olaces				
Additio	nal inf	ormation				
	_					
Worklo	ad					
120 h						
Teachi	ng cycl	ρ				
		•				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	immes)		
§ 61   Nr. 5						
Module	e appea	ars in				
Bachel Bachel Bachel Bachel Bachel Bachel Bachel	or's de or's de or's de or's de or's de or's de or's de	gree (1 major) Biology (: gree (1 major) Mathema gree (1 major) Biomedic gree (1 major) Computa gree (1 major, 1 minor) B gree (1 major) Biology (: gree (1 major) Biomedic jor Biomedicine (2020)	2015) itics (2015) iine (2015) tional Mathematics (20 Biology (Minor, 2015) 2017) iine (2018)	015) • generated 29-Jun-2025 • e	xam. reg.	page 14 / 106
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Bachelor's degree (1 major) Biomedicine (2020) Bachelor's degree (1 major) Biology (2021) Bachelor's degree (1 major, 1 minor) Biology (Minor, 2020) Bachelor's degree (1 major, 1 minor) Biology (Minor, 2021) Bachelor's degree (1 major) Biology (2022) Bachelor's degree (1 major) Mathematics (2023)

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## **Modules Chemistry**

(12 ECTS credits)

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Module title			Abbreviation		
Genera	l Chem	istry for Students of Bior	nedicine		08-CH-BM-152-m01
Module coordinator				Module offered by	
Dean of	fStudie	es Chemie (Chemistry)		Institute of Organic	Chemistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
2 seme	ster	undergraduate			
Contents					
The mo rences. chemis tical co this pui	dule te Startir try that urse is rpose,	aches the basics of chen og with atoms and ending are essential for the unc on basic experimental w qualitative and quantitat	nistry in theory and p g with biochemically r lerstanding of bioche orking techniques an ive analyses as well a	ractice, with special relevant macromolec mical processes are d the safe handling as simple reactions a	emphasis on medical refe- cules, theories and principles of dealt with. The focus of the prac- of hazardous substances. For are carried out and interpreted.
Describ mulas a ties and Verify tl and me	e and o and set d paran heoreti dical e	explain the basic models up reaction equations. K neters of chemical proces cal models based on exp ffects as well as the cher	for structure and rea (now and apply formu sses. Carry out and do erimental findings. E nical background of o	ctivity of chemical co ulas for the calculatio ocument experiment xplain the relationsh diagnostic procedure	ompounds. Draw structural for- on of substance-specific proper- ts based on existing protocols. hips between chemical properties es.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + V	V (2) +	Р (5)			
Methoo module is	l of ass creditab	e <b>ssment</b> (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written testate, ges) Assess	examir /Nacht <sup>,</sup> ment o	nation (approx. 120 minu estate (pre and post-expo ffered: Once a year, sumi	tes) and assessment eriment oral exams; a mer semester	of practical skills du approx. 15 minutes e	uring lab course (ungraded): Vor- ach) and log (approx. 3 to 5 pa-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
240 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelo	or's de	gree (1 major) Biomedicir	ne (2015)		
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
васпею	or's deg	gree (1 major) Biomedicir	ie (2020)		

Module title				Abbreviation	
Advanced Organic Chemistry for Students of Biomedicine					08-0C-BM-152-m01
Module	e coord	inator		Module offered by	
lecturer of lecture "Organische Chemie für Studierende d Medizin, Biomedizin, Zahnmedizin, Ingenieur- and Natur wissenschaften"			für Studierende der genieur- and Natur-	Institute of Organic	Chemistry
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		-		
This m	odule d	eals with the fundament	al principles of organ	ic chemistry.	
Intend	ed lear	ning outcomes			
Studen that kn	ts have owledg	e developed a knowledge ge to research problems.	of the fundamental p	orinciples of organic	chemistry and are able to apply
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (3)					
Metho module is	<b>d of ass</b> s creditab	<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
a) writt b) oral c) oral	en exa examir examin	mination (90 to 180 minu nation of one candidate e ation in groups (approx.	ites) or ach (approx. 20 minu 30 minutes)	ites) or	
Allocat	ion of <sub>l</sub>	olaces			
Additio	onal inf	ormation			
Worklo	ad				
120 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)		
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
васпеі	Bachelor's degree (1 major) Biomedicine (2020)				



## **Modules Physics**

(10 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 19 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation			
Introduction to Physics for Students of other Disciplines			11-EFNF-152-m01			
Module coordinator				Module offered by		
Managi	ing Dire	ector of the Institute of A	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
7	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
2 seme	ster	undergraduate				
Conten	ts		1			
Fundan	nentals 5.	of mechanics, vibratio	n theory, thermodynar	nics, optics, science	of electricity, atomic	and nuclear
Intende	ed leari	ning outcomes				
The stu fields ir	dents a n physi	are able to identify fund cs. They are able to app	amental physical cont Iy simple formulae in	exts. They are able to order to analyse and	o assign them to cor evaluate these cont	responding exts.
Course	<b>S</b> (type, n	umber of weekly contact hours	, language — if other than Ge	rman)		
V (4) + '	V (3)					
Methoo module is	<b>d of ass</b> creditab	s <b>essment</b> (type, scope, langu le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
written	exami	nation (60 to 120 minut	es)			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
accordi nex 1 tc	ing to § the AF	2 para. 2 sentence 2 A POLmCh and No. 4 of ar	POLmCh in conjunctio nex 2 to the APOLmCh	n with No. I 2nd lette 1	r d) and No. I 1st lett	er d) of an-
Worklo	ad					
210 h						
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	ammes)		
Module	annea	urs in				
Bachel	or's day	gree (1 maior) Riology (*	2011)			
Bachel	or's de	gree (1 major) Diology (2	<i>(</i> 2010)			
Bachel	or's de	gree (1 major) Psycholo	gy (2010)			
Bachel	or's de	gree (1 major, 1 minor) F	Pedagogy (2013)			
Bachel	or's de	gree (1 major, 1 minor) F	Political and Social Stu	ıdies (2013)		
Bachelor's degree (1 major, 1 minor) Russian Language and Culture (2008)						
Bachelor's degree (2 majors) Special Education (2009)						
Magister Theologiae Catholic Theology (2013)						
First state examination for the teaching degree Gymnasium English (2009)						
First state examination for the teaching degree Gymnasium Biology (2009)						
First state examination for the teaching degree Gymnasium Chemistry (2009)						
FIRST STATE examination for the teaching degree Gymnasium Geography (2009)						
First sta	First state examination for the teaching degree Gymnasium French Studies (2009)					
First sta	ate exa	mination for the teaching	ig degree Gymnasium	History (2009)		
Bacheloric	with 1 mai	or Biomedicine (2020)	IMIL Würzburg	• generated 20-lun-2025 • 0	xam reg	nage 20 / 106
Bachelor S	with I flid)		data record E	Bachelor (180 ECTS) Biomedizi	n - 2020	page 20 / 100

First state examination for the teaching degree Gymnasium Greek Philology (2009) First state examination for the teaching degree Gymnasium Computer Science (2009) First state examination for the teaching degree Gymnasium Italian Studies (2009) First state examination for the teaching degree Gymnasium Catholic Theology (2009) First state examination for the teaching degree Gymnasium Latin Philology (2009) First state examination for the teaching degree Gymnasium Mathematics (2012) First state examination for the teaching degree Gymnasium Mathematics (2009) First state examination for the teaching degree Gymnasium Music (2009) First state examination for the teaching degree Gymnasium Physics (2009) First state examination for the teaching degree Gymnasium Russian (2009) First state examination for the teaching degree Gymnasium Social Science (2009) First state examination for the teaching degree Gymnasium Spanish Studies (2009) First state examination for the teaching degree Gymnasium Science of Sport (2009) First state examination for the teaching degree Gymnasium Music Education, Advanced Studies (2009) Bachelor's degree (2 majors) English and American Studies (2009) Bachelor's degree (2 majors) German Language and Literature (2013) Bachelor's degree (1 major) Biochemistry (2015) Bachelor's degree (1 major) Chemistry (2015) Bachelor's degree (1 major) Geography (2015) Bachelor's degree (1 major) Computer Science (2015) Bachelor's degree (1 major) Food Chemistry (2015) Bachelor's degree (1 major) Mathematics (2015) Bachelor's degree (1 major) Musicology (2015) Bachelor's degree (1 major) Physics (2015) Bachelor's degree (1 major) Psychology (2015) Bachelor's degree (1 major) Business Management and Economics (2015) Bachelor's degree (1 major) Nanostructure Technology (2015) Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Music Education (2015) Bachelor's degree (1 major) Computational Mathematics (2015) Bachelor's degree (1 major) Political and Social Studies (2015) Bachelor's degree (1 major) Functional Materials (2015) Bachelor's degree (1 major) Academic Speech Therapy (2015) Bachelor's degree (1 major) Indology/South Asian Studies (2015) Bachelor's degree (1 major, 1 minor) Egyptology (2015) Bachelor's degree (1 major, 1 minor) Pedagogy (2015) Bachelor's degree (1 major, 1 minor) History (2015) Bachelor's degree (1 major, 1 minor) Musicology (2015) Bachelor's degree (1 major, 1 minor) Philosophy (2015) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (2015) Bachelor's degree (1 major, 1 minor) Ancient World (2015) Bachelor's degree (1 major, 1 minor) Philosophy and Religion (2015) Bachelor's degree (1 major, 1 minor) Theological Studies (2015) Bachelor's degree (1 major, 1 minor) Political and Social Studies (2015) Bachelor's degree (1 major, 1 minor) Russian Language and Culture (2015) Bachelor's degree (1 major, 1 minor) German Language and Literature (2015) Bachelor's degree (2 majors) Egyptology (2015) Bachelor's degree (2 majors) Pedagogy (2015) Bachelor's degree (2 majors) Protestant Theology (2015) Bachelor's degree (2 majors) Musicology (2015) Bachelor's degree (2 majors) Philosophy (2015) Bachelor's degree (2 majors) Special Education (2015) Bachelor's degree (2 majors) Pre- and Protohistoric Archaeology (2015) Bachelor's with 1 major Biomedicine (2020) IMU Würzburg • generated 29-Jun-2025 • exam. reg. page 21 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (2 majors) Latin Philology (2015) Bachelor's degree (2 majors) Music Education (2015) Bachelor's degree (2 majors) Philosophy and Religion (2015) Bachelor's degree (2 majors) Theological Studies (2015) Bachelor's degree (2 majors) Political and Social Studies (2015) Bachelor's degree (2 majors) Russian Language and Culture (2015) Bachelor's degree (2 majors) Greek Philology (2015) Bachelor's degree (2 majors) European Ethnology (2015) Bachelor's degree (2 majors) Indology/South Asian Studies (2015) First state examination for the teaching degree Gymnasium English (2015) First state examination for the teaching degree Gymnasium Biology (2015) First state examination for the teaching degree Gymnasium Chemistry (2015) First state examination for the teaching degree Gymnasium Geography (2015) First state examination for the teaching degree Gymnasium French Studies (2015) First state examination for the teaching degree Gymnasium German (2015) First state examination for the teaching degree Gymnasium History (2015) First state examination for the teaching degree Gymnasium Greek Philology (2015) First state examination for the teaching degree Gymnasium Computer Science (2015) First state examination for the teaching degree Gymnasium Italian Studies (2015) First state examination for the teaching degree Gymnasium Catholic Theology (2015) First state examination for the teaching degree Gymnasium Latin Philology (2015) First state examination for the teaching degree Gymnasium Mathematics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Gymnasium Russian (2015) First state examination for the teaching degree Gymnasium Social Science (2015) First state examination for the teaching degree Gymnasium Spanish Studies (2015) First state examination for the teaching degree Gymnasium Science of Sport (2015) Bachelor's degree (2 majors) Geography (2015) Bachelor's degree (2 majors) French Studies (2015) Bachelor's degree (2 majors) History (2015) Bachelor's degree (2 majors) Sport Science (Focus on health and Pedagogics in Movement) (2015) Bachelor's degree (2 majors) German Language and Literature (2015) Bachelor's degree (1 major) Mathematical Physics (2016) First state examination for the teaching degree Gymnasium Music (2015) First state examination for the teaching degree Gymnasium Music Education, Advanced Studies (2015) Bachelor's degree (1 major, 1 minor) French Studies (2016) Bachelor's degree (2 majors) French Studies (2016) Bachelor's degree (1 major, 1 minor) Italian Studies (2016) Bachelor's degree (2 majors) Italian Studies (2016) Bachelor's degree (1 major, 1 minor) Spanish Studies (2016) Bachelor's degree (2 majors) Spanish Studies (2016) Bachelor's degree (1 major) Romanic Languages (French/Italian) (2016) Bachelor's degree (1 major) Romanic Languages (French/Spanish) (2016) Bachelor's degree (1 major) Romanic Languages (Italian/Spanish) (2016) Bachelor's degree (1 major) Business Information Systems (2016) First state examination for the teaching degree Gymnasium French Studies (2016) First state examination for the teaching degree Gymnasium Italian Studies (2016) First state examination for the teaching degree Gymnasium Spanish Studies (2016) Bachelor's degree (1 major) Games Engineering (2016) Bachelor's degree (1 major, 1 minor) English and American Studies (2016) Bachelor's degree (2 majors) English and American Studies (2016) First state examination for the teaching degree Gymnasium English (2016) Bachelor's degree (1 major) Media Communication (2016) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. page 22 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (1 major) Food Chemistry (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2016) Bachelor's degree (1 major) Biology (2017) Bachelor's degree (1 major, 1 minor) Geography (2017) Bachelor's degree (1 major, 1 minor) History of Medieval and Modern Art (2017) Bachelor's degree (2 majors) History of Medieval and Modern Art (2017) Bachelor's degree (2 majors) Comparative Indo-European Linguistics (2017) Bachelor's degree (1 major) Aerospace Computer Science (2017) Bachelor's degree (1 major) Biochemistry (2017) Bachelor's degree (1 major) Chemistry (2017) Bachelor's degree (1 major, 1 minor) Museology and material culture (2017) Bachelor's degree (1 major) Economathematics (2017) Bachelor's degree (1 major) Games Engineering (2017) Bachelor's degree (1 major) Computer Science (2017) First state examination for the teaching degree Gymnasium Greek Philology (2018) Bachelor's degree (1 major) Media Communication (2018) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Human-Computer Systems (2018) Bachelor's degree (2 majors) Classical Archaeology (2018) Bachelor's degree (1 major, 1 minor) Classical Archaeology (2018) Bachelor's degree (1 major, 1 minor) Digital Humanities (2018) Bachelor's degree (2 majors) Digital Humanities (2018) First state examination for the teaching degree Gymnasium Physics (2018) Bachelor's degree (1 major) Computer Science (2019) First state examination for the teaching degree Gymnasium Mathematics (2019) Bachelor's degree (1 major, 1 minor) English and American Studies (2019) Bachelor's degree (1 major) Indology/South Asian Studies (2019) Bachelor's degree (1 major) Business Information Systems (2019) Bachelor's degree (2 majors) Indology/South Asian Studies (2019) Bachelor's degree (1 major) Business Management and Economics (2019) Bachelor's degree (1 major) Modern China (2019) Bachelor's degree (1 major) Food Chemistry (2019) Bachelor's degree (1 major) Biomedicine (2020) Bachelor's degree (1 major) Pedagogy (2020) Bachelor's degree (1 major) Political and Social Studies (2020) Bachelor's degree (1 major) Business Information Systems (2020) Bachelor's degree (1 major, 1 minor) Political and Social Studies (2020) Bachelor's degree (2 majors) European Ethnology (2020) Bachelor's degree (2 majors) Political and Social Studies (2020) Bachelor's degree (2 majors) Special Education (2020) Bachelor's degree (1 major) Physics (2020) Bachelor's degree (1 major) Nanostructure Technology (2020) Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Aerospace Computer Science (2020) Bachelor's degree (1 major, 1 minor) Museology and material culture (2020) First state examination for the teaching degree Gymnasium Physics (2020) Bachelor's degree (1 major, 1 minor) Pedagogy (2020) Bachelor's degree (2 majors) Pedagogy (2020) First state examination for the teaching degree Gymnasium Political and Social Studies (2020) Bachelor's degree (1 major) Psychology (2020) Bachelor's degree (1 major) Biology (2021) Magister Theologiae Catholic Theology (2021) Bachelor's degree (2 majors) History (2021) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. page 23 / 106

data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (1 major, 1 minor) History (2021) First state examination for the teaching degree Gymnasium History (2021) Bachelor's degree (1 major) Media Communication (2021) Bachelor's degree (2 majors) Theological Studies (2021) Bachelor's degree (1 major, 1 minor) Theological Studies (2021) Bachelor's degree (1 major, 1 minor) English and American Studies (2021) Bachelor's degree (2 majors) English and American Studies (2021) First state examination for the teaching degree Gymnasium English (2021) Bachelor's degree (1 major) Functional Materials (2021) First state examination for the teaching degree Gymnasium Philosophy and Ethics (2021) Bachelor's degree (1 major) Computer Science and Sustainability (2021) Bachelor's degree (2 majors) Comparative Indo-European Linguistics (2021) Bachelor's degree (1 major) Food Chemistry (2021) Bachelor's degree (1 major) Quantum Technology (2021) Bachelor's degree (2 majors) Special Education (2021) Bachelor's degree (1 major) Business Information Systems (2021) Bachelor's degree (1 major) Economathematics (2021) Bachelor's degree (1 major) Business Management and Economics (2021) Bachelor's degree (1 major) Human-Computer Systems (2022) Bachelor's degree (1 major, 1 minor) Museology and material culture (2022) Bachelor's degree (1 major) Biochemistry (2022) Bachelor's degree (1 major) Biology (2022) Bachelor's degree (1 major) Economathematics (2022) Bachelor's degree (1 major) Mathematical Data Science (2022) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022) First state examination for the teaching degree Gymnasium Philosophy and Ethics (2022) Bachelor's degree (2 majors) Ancient Near Eastern Archaeology (2022) Bachelor's degree (1 major, 1 minor) Ancient World (2022) Bachelor's degree (2 majors) Ancient Near Eastern Studies (2022) Bachelor's degree (1 major) Franco-German studies: language, culture, digital competence (2022) First state examination for the teaching degree Gymnasium Russian (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) First state examination for the teaching degree Gymnasium English (2023) First state examination for the teaching degree Gymnasium Geography (2023) Bachelor's degree (1 major) European Law (2023) Bachelor's degree (1 major, 1 minor) English and American Studies (2023) Bachelor's degree (2 majors) English and American Studies (2023) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2023) Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Business Information Systems (2023) Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major, 1 minor) History of Medieval and Modern Art (2023) Bachelor's degree (2 majors) History of Medieval and Modern Art (2023) Bachelor's degree (2 majors) Special Education (2023) Bachelor's degree (1 major) Business Management and Economics (2023) Bachelor's degree (1 major) Geography (2023) Bachelor's degree (2 majors) Geography (2023) Bachelor's degree (1 major, 1 minor) Geography (2023) Bachelor's degree (2 majors) European Ethnology/Empiric Cultural Studies (2023) First state examination for the teaching degree Gymnasium German (2024) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (2 majors) German Language and Literature (2024) Bachelor's degree (1 major, 1 minor) German Language and Literature (2024) Bachelor's with 1 major Biomedicine (2020) IMU Würzburg • generated 29-Jun-2025 • exam. reg. page 24 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (1 major) Music Education (2024) Bachelor's degree (2 majors) Music Education (2024) Bachelor's degree (1 major, 1 minor) Music Education (2024) Bachelor's degree (1 major) Indology/South Asian Studies (2024) Bachelor's degree (2 majors) Indology/South Asian Studies (2024) Bachelor's degree (1 major, 1 minor) Indology/South Asian Studies (2024) Bachelor's degree (1 major, 1 minor) Ancient World (2024) Bachelor's degree (2 majors) Digital Humanities (2024) Bachelor's degree (1 major, 1 minor) Digital Humanities (2024) Bachelor's degree (1 major) Midwifery (2024) Bachelor's degree (2 majors) Greek Philology (2024) Bachelor's degree (2 majors) Latin Philology (2024) First state examination for the teaching degree Gymnasium Latin Philology (2024) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Economathematics (2024) Bachelor's degree (1 major) Business Management and Economics (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) First state examination for the teaching degree Gymnasium English (2024) First state examination for the teaching degree Gymnasium History (2024) First state examination for the teaching degree Gymnasium Greek Philology (2024) Bachelor's degree (1 major) Human-Computer-Interaction (2024) Bachelor's degree (2 majors) Art Education (2024) Bachelor's degree (1 major) Digital Business & Data Science (2024) Bachelor's degree (1 major) Classics (2024) Bachelor's degree (1 major) Diversity, Ethics and Religions (2024) Bachelor's degree (1 major) Functional Materials (2025) Bachelor's degree (1 major) (2025) Bachelor's degree (1 major) Food Chemistry (2025) Bachelor's degree (1 major, 1 minor) European Ethnology/Empiric Cultural Studies (2025) Bachelor's degree (1 major) Pedagogy (2025) Bachelor's degree (2 majors) Pedagogy (2025) Bachelor's degree (1 major) Economathematics (2025) Bachelor's degree (1 major) Academic Speech Therapy (2025) Bachelor's degree (1 major, 1 minor) Pedagogy (2025) Bachelor's degree (1 major) Games Engineering (2025) Bachelor's degree (2 majors) Sport Science (Focus on health and Pedagogics in Movement) (2025) First state examination for the teaching degree Gymnasium German (2025) Bachelor's degree (1 major) Aerospace Computer Science (2025) Bachelor's degree (1 major, 1 minor) German Language and Literature (2025) Bachelor's degree (1 major) Computer Science (2025) Bachelor's degree (2 majors) German Language and Literature (2025) First state examination for the teaching degree Gymnasium Computer Science (2025) Bachelor's degree (1 major) Computer Science and Sustainability (2025) First state examination for the teaching degree Gymnasium (2025)

Module title			Abbreviation			
Laboratory Course Physics for Students of other Disciplines			11-PFNF-152-m01			
Module	e coord	inator		Module offered by	<u> </u>	
Manag	ing Dire	ector of the Institute of A	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ester	undergraduate				
Conten	nts					
Simple tic resc	e experi onance	ments in the fields of m atomic and nuclear phy	echanics, vibration th vsics, imaging method	eory, thermodynamic s.	cs, optics, X-rays, nu	clear magne-
Intend	ed lear	ning outcomes				
The stu perime of erroi derstar and im	udents ents. Th rs in ex nding o aging r	have recognised and ur ey can conduct simple o periments. They are abl f physical phenomena a nethods as well as their	derstood physical cor experiments in the lab e to compile a protoco and know the basic ide r applications, especia	Itexts on the basis of oratory. They are abl I for experimental pr eas and ways of func Ily in the field of bio	f the implementation e to identify and ass ocedures. They have tioning of different n medicine.	n of own ex- ess sources e a basic un- neasuring
Course	<b>S</b> (type, r	number of weekly contact hours	, language — if other than Ge	rman)		
P (4)						
Metho module is	<b>d of ass</b> s creditab	sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
a) prac prox. 9 Each e: ments	tical as o minu xperimo can eao	isignment with oral test tes). ent comprises preparati ch be repeated once.	(approx. 15 minutes, o	evaluation. Test as w	and b) written exami ell as performance c	nation (ap- of experi-
Allocat	tion of p	olaces				
Only as	s part o	f pool of general transfe	erable skills (ASQ): 10	places (lottery)		
Additio	onal inf	ormation				
accord nex 1 to	ing to § o the Al	2 para. 2 sentence 2 A POLmCh and No. 4 of ar	POLmCh in conjunctio	n with No. I 2nd lette າ	er d) and No. I 1st lett	er d) of an-
Worklo	ad					
90 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)		
Module appears in						
Bachelor's degree (1 major) Biology (2011)						
Bachelor's degree (1 major) Chemistry (2010)						
Bachelor's degree (1 major) Psychology (2010)						
Bachelor's degree (1 major, 1 minor) Pedagogy (2013)						
Bachelor's degree (1 major, 1 minor) Political and Social Studies (2013) Bachelor's degree (1 major, 1 minor) Russian Language and Culture (2008)						
Bachelor's degree (2 majors) Special Education (2009)						
Magist	er Theo	logiae Catholic Theolog	y (2013)			
First st	ate exa	mination for the teaching	ng degree Gymnasium	English (2009)		
Bachelor's	with 1 ma	jor Biomedicine (2020)	JMU Würzburg data record E	g • generated 29-Jun-2025 • e achelor (180 ECTS) Biomediz	xam. reg. in - 2020	page 26 / 106

First state examination for the teaching degree Gymnasium Biology (2009) First state examination for the teaching degree Gymnasium Chemistry (2009) First state examination for the teaching degree Gymnasium Geography (2009) First state examination for the teaching degree Gymnasium French Studies (2009) First state examination for the teaching degree Gymnasium German (2009) First state examination for the teaching degree Gymnasium History (2009) First state examination for the teaching degree Gymnasium Greek Philology (2009) First state examination for the teaching degree Gymnasium Computer Science (2009) First state examination for the teaching degree Gymnasium Italian Studies (2009) First state examination for the teaching degree Gymnasium Catholic Theology (2009) First state examination for the teaching degree Gymnasium Latin Philology (2009) First state examination for the teaching degree Gymnasium Mathematics (2012) First state examination for the teaching degree Gymnasium Mathematics (2009) First state examination for the teaching degree Gymnasium Music (2009) First state examination for the teaching degree Gymnasium Physics (2009) First state examination for the teaching degree Gymnasium Russian (2009) First state examination for the teaching degree Gymnasium Social Science (2009) First state examination for the teaching degree Gymnasium Spanish Studies (2009) First state examination for the teaching degree Gymnasium Science of Sport (2009) First state examination for the teaching degree Gymnasium Music Education, Advanced Studies (2009) Bachelor's degree (2 majors) English and American Studies (2009) Bachelor's degree (2 majors) German Language and Literature (2013) Bachelor's degree (1 major) Biochemistry (2015) Bachelor's degree (1 major) Chemistry (2015) Bachelor's degree (1 major) Geography (2015) Bachelor's degree (1 major) Computer Science (2015) Bachelor's degree (1 major) Food Chemistry (2015) Bachelor's degree (1 major) Mathematics (2015) Bachelor's degree (1 major) Musicology (2015) Bachelor's degree (1 major) Physics (2015) Bachelor's degree (1 major) Psychology (2015) Bachelor's degree (1 major) Business Management and Economics (2015) Bachelor's degree (1 major) Nanostructure Technology (2015) Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Music Education (2015) Bachelor's degree (1 major) Computational Mathematics (2015) Bachelor's degree (1 major) Political and Social Studies (2015) Bachelor's degree (1 major) Functional Materials (2015) Bachelor's degree (1 major) Academic Speech Therapy (2015) Bachelor's degree (1 major) Indology/South Asian Studies (2015) Bachelor's degree (1 major, 1 minor) Egyptology (2015) Bachelor's degree (1 major, 1 minor) Pedagogy (2015) Bachelor's degree (1 major, 1 minor) History (2015) Bachelor's degree (1 major, 1 minor) Musicology (2015) Bachelor's degree (1 major, 1 minor) Philosophy (2015) Bachelor's degree (1 major, 1 minor) Pre- and Protohistoric Archaeology (2015) Bachelor's degree (1 major, 1 minor) Ancient World (2015) Bachelor's degree (1 major, 1 minor) Philosophy and Religion (2015) Bachelor's degree (1 major, 1 minor) Theological Studies (2015) Bachelor's degree (1 major, 1 minor) Political and Social Studies (2015) Bachelor's degree (1 major, 1 minor) Russian Language and Culture (2015) Bachelor's degree (1 major, 1 minor) German Language and Literature (2015) Bachelor's degree (2 majors) Egyptology (2015) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. page 27 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (2 majors) Pedagogy (2015) Bachelor's degree (2 majors) Protestant Theology (2015) Bachelor's degree (2 majors) Musicology (2015) Bachelor's degree (2 majors) Philosophy (2015) Bachelor's degree (2 majors) Special Education (2015) Bachelor's degree (2 majors) Pre- and Protohistoric Archaeology (2015) Bachelor's degree (2 majors) Latin Philology (2015) Bachelor's degree (2 majors) Music Education (2015) Bachelor's degree (2 majors) Philosophy and Religion (2015) Bachelor's degree (2 majors) Theological Studies (2015) Bachelor's degree (2 majors) Political and Social Studies (2015) Bachelor's degree (2 majors) Russian Language and Culture (2015) Bachelor's degree (2 majors) Greek Philology (2015) Bachelor's degree (2 majors) European Ethnology (2015) Bachelor's degree (2 majors) Indology/South Asian Studies (2015) First state examination for the teaching degree Gymnasium English (2015) First state examination for the teaching degree Gymnasium Biology (2015) First state examination for the teaching degree Gymnasium Chemistry (2015) First state examination for the teaching degree Gymnasium Geography (2015) First state examination for the teaching degree Gymnasium French Studies (2015) First state examination for the teaching degree Gymnasium German (2015) First state examination for the teaching degree Gymnasium History (2015) First state examination for the teaching degree Gymnasium Greek Philology (2015) First state examination for the teaching degree Gymnasium Computer Science (2015) First state examination for the teaching degree Gymnasium Italian Studies (2015) First state examination for the teaching degree Gymnasium Catholic Theology (2015) First state examination for the teaching degree Gymnasium Latin Philology (2015) First state examination for the teaching degree Gymnasium Mathematics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Gymnasium Russian (2015) First state examination for the teaching degree Gymnasium Social Science (2015) First state examination for the teaching degree Gymnasium Spanish Studies (2015) First state examination for the teaching degree Gymnasium Science of Sport (2015) Bachelor's degree (2 majors) Geography (2015) Bachelor's degree (2 majors) French Studies (2015) Bachelor's degree (2 majors) History (2015) Bachelor's degree (2 majors) Sport Science (Focus on health and Pedagogics in Movement) (2015) Bachelor's degree (2 majors) German Language and Literature (2015) Bachelor's degree (1 major) Mathematical Physics (2016) First state examination for the teaching degree Gymnasium Music (2015) First state examination for the teaching degree Gymnasium Music Education, Advanced Studies (2015) Bachelor's degree (1 major, 1 minor) French Studies (2016) Bachelor's degree (2 majors) French Studies (2016) Bachelor's degree (1 major, 1 minor) Italian Studies (2016) Bachelor's degree (2 majors) Italian Studies (2016) Bachelor's degree (1 major, 1 minor) Spanish Studies (2016) Bachelor's degree (2 majors) Spanish Studies (2016) Bachelor's degree (1 major) Romanic Languages (French/Italian) (2016) Bachelor's degree (1 major) Romanic Languages (French/Spanish) (2016) Bachelor's degree (1 major) Romanic Languages (Italian/Spanish) (2016) Bachelor's degree (1 major) Business Information Systems (2016) First state examination for the teaching degree Gymnasium French Studies (2016) First state examination for the teaching degree Gymnasium Italian Studies (2016) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. page 28 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

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First state examination for the teaching degree Gymnasium Spanish Studies (2016) Bachelor's degree (1 major) Games Engineering (2016) Bachelor's degree (1 major, 1 minor) English and American Studies (2016) Bachelor's degree (2 majors) English and American Studies (2016) First state examination for the teaching degree Gymnasium English (2016) Bachelor's degree (1 major) Media Communication (2016) Bachelor's degree (1 major) Food Chemistry (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2016) Bachelor's degree (1 major) Biology (2017) Bachelor's degree (1 major, 1 minor) Geography (2017) Bachelor's degree (1 major, 1 minor) History of Medieval and Modern Art (2017) Bachelor's degree (2 majors) History of Medieval and Modern Art (2017) Bachelor's degree (2 majors) Comparative Indo-European Linguistics (2017) Bachelor's degree (1 major) Aerospace Computer Science (2017) Bachelor's degree (1 major) Biochemistry (2017) Bachelor's degree (1 major) Chemistry (2017) Bachelor's degree (1 major, 1 minor) Museology and material culture (2017) Bachelor's degree (1 major) Economathematics (2017) Bachelor's degree (1 major) Games Engineering (2017) Bachelor's degree (1 major) Computer Science (2017) First state examination for the teaching degree Gymnasium Greek Philology (2018) Bachelor's degree (1 major) Media Communication (2018) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Human-Computer Systems (2018) Bachelor's degree (2 majors) Classical Archaeology (2018) Bachelor's degree (1 major, 1 minor) Classical Archaeology (2018) Bachelor's degree (1 major, 1 minor) Digital Humanities (2018) Bachelor's degree (2 majors) Digital Humanities (2018) First state examination for the teaching degree Gymnasium Physics (2018) Bachelor's degree (1 major) Computer Science (2019) First state examination for the teaching degree Gymnasium Mathematics (2019) Bachelor's degree (1 major, 1 minor) English and American Studies (2019) Bachelor's degree (1 major) Indology/South Asian Studies (2019) Bachelor's degree (1 major) Business Information Systems (2019) Bachelor's degree (2 majors) Indology/South Asian Studies (2019) Bachelor's degree (1 major) Business Management and Economics (2019) Bachelor's degree (1 major) Modern China (2019) Bachelor's degree (1 major) Food Chemistry (2019) Module studies (Bachelor) Orientierungsstudien (2020) Bachelor's degree (1 major) Biomedicine (2020) Bachelor's degree (1 major) Pedagogy (2020) Bachelor's degree (1 major) Political and Social Studies (2020) Bachelor's degree (1 major) Business Information Systems (2020) Bachelor's degree (1 major, 1 minor) Political and Social Studies (2020) Bachelor's degree (2 majors) European Ethnology (2020) Bachelor's degree (2 majors) Political and Social Studies (2020) Bachelor's degree (2 majors) Special Education (2020) Bachelor's degree (1 major) Physics (2020) Bachelor's degree (1 major) Nanostructure Technology (2020) Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Aerospace Computer Science (2020) Bachelor's degree (1 major, 1 minor) Museology and material culture (2020) First state examination for the teaching degree Gymnasium Physics (2020) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (1 major, 1 minor) Pedagogy (2020) Bachelor's degree (2 majors) Pedagogy (2020) First state examination for the teaching degree Gymnasium Political and Social Studies (2020) Bachelor's degree (1 major) Psychology (2020) Bachelor's degree (1 major) Biology (2021) Magister Theologiae Catholic Theology (2021) Bachelor's degree (2 majors) History (2021) Bachelor's degree (1 major, 1 minor) History (2021) First state examination for the teaching degree Gymnasium History (2021) Bachelor's degree (1 major) Media Communication (2021) Bachelor's degree (2 majors) Theological Studies (2021) Bachelor's degree (1 major, 1 minor) Theological Studies (2021) Bachelor's degree (1 major, 1 minor) English and American Studies (2021) Bachelor's degree (2 majors) English and American Studies (2021) First state examination for the teaching degree Gymnasium English (2021) Bachelor's degree (1 major) Functional Materials (2021) First state examination for the teaching degree Gymnasium Philosophy and Ethics (2021) Bachelor's degree (1 major) Computer Science and Sustainability (2021) Bachelor's degree (2 majors) Comparative Indo-European Linguistics (2021) Bachelor's degree (1 major) Food Chemistry (2021) Bachelor's degree (1 major) Quantum Technology (2021) Bachelor's degree (2 majors) Special Education (2021) Bachelor's degree (1 major) Business Information Systems (2021) Bachelor's degree (1 major) Economathematics (2021) Bachelor's degree (1 major) Business Management and Economics (2021) Bachelor's degree (1 major) Human-Computer Systems (2022) Bachelor's degree (1 major, 1 minor) Museology and material culture (2022) Bachelor's degree (1 major) Biochemistry (2022) Bachelor's degree (1 major) Biology (2022) Bachelor's degree (1 major) Economathematics (2022) Bachelor's degree (1 major) Mathematical Data Science (2022) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022) First state examination for the teaching degree Gymnasium Philosophy and Ethics (2022) Bachelor's degree (2 majors) Ancient Near Eastern Archaeology (2022) Bachelor's degree (1 major, 1 minor) Ancient World (2022) Bachelor's degree (2 majors) Ancient Near Eastern Studies (2022) Bachelor's degree (1 major) Franco-German studies: language, culture, digital competence (2022) First state examination for the teaching degree Gymnasium Russian (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) First state examination for the teaching degree Gymnasium English (2023) First state examination for the teaching degree Gymnasium Geography (2023) Bachelor's degree (1 major) European Law (2023) Bachelor's degree (1 major, 1 minor) English and American Studies (2023) Bachelor's degree (2 majors) English and American Studies (2023) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2023) Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Business Information Systems (2023) Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major, 1 minor) History of Medieval and Modern Art (2023) Bachelor's degree (2 majors) History of Medieval and Modern Art (2023) Bachelor's degree (2 majors) Special Education (2023) Bachelor's degree (1 major) Business Management and Economics (2023) Bachelor's degree (1 major) Geography (2023) Bachelor's with 1 major Biomedicine (2020) JMU Würzburg • generated 29-Jun-2025 • exam. reg. page 30 / 106 data record Bachelor (180 ECTS) Biomedizin - 2020

Bachelor's degree (2 majors) Geography (2023) Bachelor's degree (1 major, 1 minor) Geography (2023) Bachelor's degree (2 majors) European Ethnology/Empiric Cultural Studies (2023) First state examination for the teaching degree Gymnasium German (2024) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (2 majors) German Language and Literature (2024) Bachelor's degree (1 major, 1 minor) German Language and Literature (2024) Bachelor's degree (1 major) Music Education (2024) Bachelor's degree (2 majors) Music Education (2024) Bachelor's degree (1 major, 1 minor) Music Education (2024) Bachelor's degree (1 major) Indology/South Asian Studies (2024) Bachelor's degree (2 majors) Indology/South Asian Studies (2024) Bachelor's degree (1 major, 1 minor) Indology/South Asian Studies (2024) Bachelor's degree (1 major, 1 minor) Ancient World (2024) Bachelor's degree (2 majors) Digital Humanities (2024) Bachelor's degree (1 major, 1 minor) Digital Humanities (2024) Bachelor's degree (1 major) Midwifery (2024) Bachelor's degree (2 majors) Greek Philology (2024) Bachelor's degree (2 majors) Latin Philology (2024) First state examination for the teaching degree Gymnasium Latin Philology (2024) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Economathematics (2024) Bachelor's degree (1 major) Business Management and Economics (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) First state examination for the teaching degree Gymnasium English (2024) First state examination for the teaching degree Gymnasium History (2024) First state examination for the teaching degree Gymnasium Greek Philology (2024) Bachelor's degree (1 major) Human-Computer-Interaction (2024) Bachelor's degree (2 majors) Art Education (2024) Bachelor's degree (1 major) Digital Business & Data Science (2024) Bachelor's degree (1 major) Classics (2024) Bachelor's degree (1 major) Diversity, Ethics and Religions (2024) Bachelor's degree (1 major) Functional Materials (2025) Bachelor's degree (1 major) (2025) Bachelor's degree (1 major) Food Chemistry (2025) Bachelor's degree (1 major, 1 minor) European Ethnology/Empiric Cultural Studies (2025) Bachelor's degree (1 major) Pedagogy (2025) Bachelor's degree (2 majors) Pedagogy (2025) Bachelor's degree (1 major) Economathematics (2025) Bachelor's degree (1 major) Academic Speech Therapy (2025) Bachelor's degree (1 major, 1 minor) Pedagogy (2025) Bachelor's degree (1 major) Games Engineering (2025) Bachelor's degree (2 majors) Sport Science (Focus on health and Pedagogics in Movement) (2025) First state examination for the teaching degree Gymnasium German (2025) Bachelor's degree (1 major) Aerospace Computer Science (2025) Bachelor's degree (1 major, 1 minor) German Language and Literature (2025) Bachelor's degree (1 major) Computer Science (2025) Bachelor's degree (2 majors) German Language and Literature (2025) First state examination for the teaching degree Gymnasium Computer Science (2025) Bachelor's degree (1 major) Computer Science and Sustainability (2025) First state examination for the teaching degree Gymnasium (2025)



## Modules Mathematics/Statistics

(5 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 32 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation		
Statistics for Students of natural sciences and biomedicine			10-M-STAB-152-m01		
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	atics
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				
Basics inferen	of deso tial sta	criptive statistics, importatistics: selected confiden	ant discrete and contine contract of the contr	inuous probability d tric and nonparamet	istributions, basic procedures of ric tests.
Intende	ed lear	ning outcomes			
After finishing the course, students will be able to utilise basic statistical methods for the evaluation of data and to interpret the results. They will know the principles behind applied statistical methods and will be able to take a critical look at the statistical procedures which are available. By presenting solutions of excercises, students will improve their communication skills and learn to justify their solutions using logical arguments.					
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (2)				
Methoo module is	<b>d of ass</b> creditab	<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 (90 to 120 minutes	5)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor's degree (1 major) Biomedicine (2015)					
Bachel	Bachelor's degree (1 major) Biomedicine (2018)				
exchan	or 5 08; ge pros	gree (1 major) Biomedicir gram Mathematics (2022)	ie (2020) )		
exeriar					



## Modules Biochemistry and Molecular Biology

(20 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 34 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title				Abbreviation	
Basic Biochemistry and Molecular Biology			03-98-BCH-202-m01		
Module	e coord	inator		Module offered by	
holders mental	s of the Bioche	Chairs of Physiological C mistry, Biochemistry and	hemistry, Develop- Molecular Biology	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		
2 seme	ster	undergraduate	Admission prerequis	site to assessment:	Eingangstestate
Conten	ts				
mental Molecu mones Perform	s of int lar biol and sig	ermediate and energy me logy: storage, transduction gnal transduction process ochemical detection reac	etabolism, mitochonc on and expression of ses, basic immunolog tions and molecular b	Irial function. genetic information, gy. biology experiments	, control of cell functions by hor-
Intende	ed leari	ning outcomes			
ganism cular bi ability t simple	s. They iologica to revie bioche	understand basic metab al relationships of cell an w and present limited to mical and molecular biol	oolic processes in hui d organ functions an pics in small teams. T ogical measurement	nans and their regu d possible application hey are proficient ir data and they can d	lation. They can describe mole- on examples. They possess the n the reproducible collection of escribe quality parameters.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (5) + 9 Method	5 (4) + d of ass	U (4) s <b>essment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
module is	creditab	le for bonus)			
Written	exami	nation (45 to 90 minutes)	) and presentation (w	eighted 3:1)	
Allocat	ion of p	olaces			
Additional information					
Workload					
reaching cycle					
<b>Referred to In LPU I</b> (examination regulations for teaching-degree programmes)					
Modula	20002	urs in			
Bachel	or's de	gree (1 major) Biomedicir	16 (2020)		
Dachelor's degree (1 major) Diomedicine (2020)					

Module title			Abbreviation		
Advanced Biochemistry and Molecular Biology			03-98-BCHF-202-m01		
Module	e coord	inator		Module offered by	
holders mental	s of the Bioche	Chairs of Physiological C emistry, Biochemistry and	hemistry, Develop- Molecular Biology	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	Admission prerequi	site to assessment: I	log.
Conten	ts				
Enhanc control gate ce of curre	ed insi of cell llular p nt liter	ght into functional bioch and organ functions. App arameters such as gene rature on selected topics.	emical and molecula blication of molecula expression patterns,	r biological relations r biology and genetic protein expression c	ships. Examples of the molecular c engineering methods to investi- or growth and apoptosis. Review
Intende	ed lear	ning outcomes			
and are knowle people cumscr ses on	a able t dge fro with a ibed ex this ba	o present and use it (prof om the primary literature of comparable level of know xperiments (methodologi sis.	fessional competence), to (self-competence), to wledge (social compe cal competence) and	e). In addition, they l process this knowle stence). They have ac can plan and develo	have learned to acquire new edge and to communicate it to cquired practical routine in cir- op their own experimental analy-
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (4) + Module	S (1) + e taugh	Ü (6) t in: German and English			
Methoo module is	<b>d of ass</b> creditab	<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 (30 to 90 minutes)	) and presentation (w	veighted 3:1)	
Allocat	ion of p	olaces			
Additional information					
Workload					
300 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
Bachelor's degree (1 major) Biomedicine (2020)					


### Modules Anatomy and Pathology

(15 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 37 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation		
Anatomy and Cell Biology			03-98-ANA-1-152-m01		
Module coordinator		Module offered by			
Institut	e of An	atomy and Cell Biology		Faculty of Medicine	
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				
Gross a urinary	anatom organs	y: musculoskeletal syste 5, sexual organs, brain. In	m, cranium, respirato troduction to cytolog	ory system, cardiova y and histology.	scular organs, digestive organs,
Intende	ed learı	ning outcomes		·	
The stu	dents l	have developed a fundan	nental knowledge of g	general microscopic	as well as macroscopic anatomy.
Course	<b>S</b> (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) + 2	S (2) +	Ü (2)			
Method	d 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	s creditab	le for bonus)			
written	examii	nation (60 to 90 minutes)	) ar comostor		
Allocat	ion of r				
Allocal		Jaces			
Additio	nal inf	ormation			
Auditio					
Worklo					
150 h					
Teachi	ng cycl	e	,		
<b>Referred to in IPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	Bachelor's degree (1 major) Biomedicine (2015)				
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
Bachel	Bachelor's degree (1 major) Biomedicine (2020)				

Module title			Abbreviation		
Histology					03-98-ANA-2-152-m01
Module	e coord	inator		Module offered by	
Institut	e of An	atomy and Cell Biology	_	Faculty of Medicine	
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				
Founda stive, c stem (n	itions o ardiova nicrosc	f general cytology and hi ascular, respiratory and u opy of tissue sections an	stology. General and rogenital organs and d practical exercises	special microscopic endocrine glands, c ), fundamentals of h	anatomy (histology) of the dige- entral and peripheral nervous sy- istopathology.
Intende	ed leari	ning outcomes			· · ·
The stu	dents I	nave developed a fundam	nental knowledge of g	seneral and special i	microscopic anatomy.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + I	P (5)				
Methoo module is	<b>1 of ass</b> s creditab	<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 Assess	examii ment o	nation (approx. 60 minuto ffered: Once a year, sumi	es) and assessment o mer semester	of practical skills (ap	prox. 60 minutes), weighted 1:2
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor's degree (1 major) Biomedicine (2015)					
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
Bachel	or's deg	gree (1 major) Biomedicir	ie (2020)		

Module title			Abbreviation		
General Pathology				03-98-APA-152-m01	
Module	e coord	inator		Module offered by	
Institut	e of Pa	thology		Faculty of Medicine	
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				
Genera mour p	l and s atholoន្	pecial pathology: patholo gy, examples of importan	ogy of cell damage, cl t organ diseases.	assification of inflan	nmation, immunopathology, tu-
Intende	ed learr	ning outcomes			
The stu logical, classify gnostic	dents a immur metho consic	achieve knowledge of the nohistochemical, cytoger ods of pathology in the co lerations.	basics of general pa netic and molecular b ntext of other medica	thology and method iological investigation al disciplines and to	s of pathology such as morpho- ons. They acquire the ability to include them in differential dia-
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) +	P (1)				
Methoo module is	<b>d of ass</b> creditab	e <b>ssment</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 (60 to 90 minutes)	and successful com	pletion of practical e	exercises (ungraded)
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor's degree (1 major) Biomedicine (2015)					
Bachel	or's de	gree (1 major) Biomedicir	ie (2018)		
Bachel	Bachelor's degree (1 major) Biomedicine (2020)				



## **Modules Physiology**

(10 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 41 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation		
Human Physiology 1					03-98-PHY1-202-m01
Module	e coord	inator		Module offered by	
holders Neurop	s of the hysiolo	Chairs of Cardiovascular	Physiology and	Faculty of Medicine	
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				
heart a and co the wat cation	nd circ ntractic ter and of the r	ulatory system, the veget on of the heart muscle. Of electrolyte balance in the recessary techniques.	a pathophysiology. ( ative regulation of th ther topics include th e kidneys, the acid-b	e cardiovascular sys e physiology of the c ase balance and the	temodynamic processes in the tem and the spread of excitation cell membrane, the regulation of regulation of respiration. Appli-
Intende	ed lear	ning outcomes			
Professional work with measuring devices to record the necessary parameters on numars and evaluation of the measured values obtained for the analysis of bodily functions. Checking, evaluating and error analysis of the results. Understanding of the physiological principles and their importance for human diseases. Independent work and problem-oriented learning through presentation and discussion of the measurement results and the organ functions derived from them. Acquiring the ability to discuss scientific and medical aspects of physiology and pathophysiology.          Courses (type, number of weekly contact hours, language – if other than German)         V (3) + Ü (3)         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)					
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Workload					
150 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	irs in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title			Abbreviation		
Human Physiology 2					03-98-PHY2-202-m01
Module	e coord	inator		Module offered by	
holders Neurop	s of the hysiolo	Chairs of Cardiovascular	Physiology and	Faculty of Medicine	
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				
Learn b the coo ctions o stics wi	asic pr ordinati of the b ith the	inciples of physiology an on of motor nerves and n lood, thermoregulation c vestibular system and op	d pathophysiology. 1 nuscles and the sens of the human body ar otics. Application of tl	The focus is on the provident of the focus is on the provident of the prov	rocesses of neuronal excitation, Further content includes the fun- nce, exercise physiology, acou- ques.
Intende	ed learı	ning outcomes			
measur sults. U and pro functio pathop	red valu Inderst oblem-o ns deri hysiolo	ues obtained for the anal anding of the physiologic priented learning through ved from them. Acquiring ogy.	ysis of bodily functio cal principles and the presentation and di the ability to discus	ns. Checking, evalua ir importance for hu scussion of the meas s scientific and medi	ating and error analysis of the re- man diseases. Independent work surement results and the organ ical aspects of physiology and
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) +	Ü (3)				
Methoo module is	<b>d of ass</b> creditab	<b>essment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
Written Assess	exami ment o	nation (approx. 60 minut ffered: Once a year, sumi	es) mer semester		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Workload					
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
Bachelor's degree (1 major) Biomedicine (2020)					



## Modules Pharmacology and Toxicology

(5 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 44 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation			
Pharmacology and Toxicology				03-98-APT-152-m01		
Module	coord	inator		Module offered by		
Institut	e of Ph	armacology and Toxicolo	gy	Faculty of Medicine		
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					
General influenc cals inf hormon	l princi cing the luencir nes, tur	ples of pharmacology an e autonomous and centra og the gastrointestinal tra nor therapeutics, immun	d toxicology, pharma al nervous system, ca ict as well as lipid an osuppressants, anti-i	codynamics and pha Irdiac drugs, diuretic d glucose metabolis Infectives, asthma, t	armacokinetics, pharmaceuticals s, anticoagulants, pharmaceuti- m, analgesics, anti-rheumatics, oxins, treatment of intoxications.	
Intende	ed learn	ning outcomes				
Student have ac propert	ts have quired ies and	e acquired a fundamental specific knowledge of ea I their most relevant side	knowledge of genera ach named drug class effects.	al principles in pharr 5, their mechanisms	nacology and toxicology. They of action, basal pharmacokinetic	
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (5)						
Method module is	l of ass creditab	essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written If annou examin (approx	examir unced l ation o k. 20 m	nation (45 to 60 minutes) by the lecturer at the beg f one candidate each (20 inutes per candidate).	inning of the course, to 30 minutes) or an	the written examina oral examination in	tion may be replaced by an oral groups of up to 3 candidates	
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelo	Bachelor's degree (1 major) Biomedicine (2015)					
Bachel	or's deg	gree (1 major) Biomedicir	ie (2018)			
Bachelo	Bachelor's degree (1 major) Biomedicine (2020)					



### Modules Microbiology, Virology and Immunology

(10 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 46 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title			Abbreviation		
Microbiology					03-98-MIK-202-m01
Module	coord	inator		Module offered by	
Institut	e of Mo	lecular Infection Biology	_	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				
The the milesto ecosyst lation, a tious di	oretica nes in ems, c applica seases	l basics of microbiology a microbiological research lassification and functior tion of diagnostic metho and their causes, function	are introduced in the , overview of the dive n of virulence factors, ds, interactions of pa on of the microbiota	lecture. This include rsity of microbiologi evolution of pathog thogens with the im and characteristics o	es historical developments and ical organisms and their role in genicity, processes of gene regu- imune system, common infec- of parasitic pathogens.
Intende	ed learr	ning outcomes			
Studen lopmen gen, to fer in th tionship	ts are a ts, to a discus le emei ps. S (type n	Ible to compare characte ssess modern methods of s evolutionary aspects of gence of new pathogenic	ristics of prokaryotic of microbiological res pathogenic microorg c variants. Acquisition	cells and eukaryotic search, to analyze th ganisms, to evaluate n of the ability to stru man)	e cells, to classify historical deve- e virulence potential of a patho- the role of horizontal gene trans- ucture and network complex rela-
V (2)	s (type, n			inany	
Method	l of ass	essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
Written If annoi examin	examinunced lation o	le for bonus) nation (approx. 60 minut by the lecturer at the beg f one candidate each (20 inutes per candidate)	es) inning of the course, o to 30 minutes) or an	the written examina oral examination in	tion may be replaced by an oral groups of up to 3 candidates
Allocati	ion of r				
Additio	nal info	ormation			
Workload					
150 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	appea	rs in			
Bachelo	Bachelor's degree (1 major) Biomedicine (2020)				

Module title				Abbreviation	
General Virology and Immunology				03-98-VIM-202-m01	
Module coordinator			Module offered by		
Institute of Vir	ology and Immunobiolog	SV	Faculty of Biology		
ECTS Metho	od of grading	Only after succ. com	pl. of module(s)		
5 numerical grade					
Duration	Module level	Other prerequisites			
1 semester	undergraduate				
Contents					
sification of im such as immun system, such as granulocytes, presentation to ons of B and T ne system resp and parasites. gy, vaccination Virology: Learr cycles, and tra sic features of pression, asse cines and ther <b>Intended learr</b> Immunology: I the immune sy	Immunology: Learning the basics of immunology, including the components of the immune system and the clas- sification of immune reactions, organs, cell types and important molecules. Understanding of basic principles such as immune cell migration or systemic communication via soluble factors. Knowledge of the innate immune system, such as complement, antimicrobial peptides, inflammation, the cell types and function of macrophages, granulocytes, natural killer cells and dendritic cells. Molecular components of pathogen recognition and antigen presentation to cells of the adaptive immune system. Overviews of the generation, activation and effector functi- ons of B and T cells of the adaptive immune system, including anti-bodies. Learn how components of the immu- ne system respond to various situations of immune tolerance and immune responses against viruses, bacteria and parasites. Basics of hyperreactivities, autoimmunity, transplantation, immune deficiency, tumor immunolo- gy, vaccinations and modern approaches to immune therapy. Virology: Learning the structure of viruses and understanding the basic principles of diagnostics, viral replication cycles, and transmission using the example of DNA viruses, RNA viruses and retroviruses. Furthermore, the ba- sic features of tumor-associated viruses are explained. In particular, virion and genome structure, viral gene ex- pression, assembly and release of viruses are explained. Furthermore, the basics of pathogenesis, antiviral vac- cines and therapeutics are presented and discussed Intended learning outcomes Immunology: Understanding of the basics of immunology and knowledge of the components and functions of				
Virology: Unde different virus	erstanding of the basics of families. Theoretical explicitly and classification of the second s	of virology and knowle ertise to work in mole f current research res	edge of the molecula ecular biology-orient ults in the field of vi	ar biological characteristics of red laboratories in the field of vi-	
Courses (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) + V (2)			•		
Method of ass module is creditabl	<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 examination (approx. 60 minutes) If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (20 to 30 minutes) or an oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate).					
Allocation of places					
Additional information					
Workload					
150 h					
Teaching cycle	9				

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

#### Module appears in

Bachelor's degree (1 major) Biomedicine (2020)

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### Modules Advanced Lab Course

(8 ECTS credits)

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	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module	e title				Abbreviation
Project Work in a Research Laboratory		03-98-IPP-152-m01			
Module	e coord	inator		Module offered by	
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	Prior approval from	degree programme c	oordinator required.
Conten	ts				
Project fic prob	work ir olem. Th	n a research laboratory fo his project may lay the fo	cusing on training in undation for a subse	new methods and th quent Bachelor's the	ne in-depth analysis of a scienti- esis.
Intende	ed learr	ning outcomes			
Perform and lea mental on prim	ning mo Irning o work a nary lite	ore elaborate experiments of project-specific analysi nd problem-solving strat erature and knowledge tra	s with sequential me s and evaluation pro egies. Students gain ansfer.	thods. Application o cedures. Gradual int an in-depth insight o	f methods learned in the course roduction to independent experi- of a current research topic based
Course	<b>S</b> (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
R (12) Module	e taugh	t in: German/English			
Method module is	d of ass	essment (type, scope, langua;	ge — if other than German, e	examination offered — if no	t every semester, information on whether
present	tation (	20 to 30 minutes) as wel	l as log (10 to 15 page	es) or, where applica	ble, project proposal (approx, 5
pages)				,,	
Langua	ge of a	ssessment: German or Er	nglish		
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Additio	nal info	ormation on module dura	tion: 6 to 8 weeks.		
Worklo	ad				
240 h					
Teachir	Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in				
Bachelo	or's de	gree (1 major) Biomedicir	ie (2015)		
Bachel	or's deg	gree (1 major) Biomedicir gree (1 major) Biomedicir	ie (2018) ie (2020)		
Dachell	Bachelor's degree (1 major) Biomedicine (2020)				

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### **Compulsory Electives**

(30 ECTS credits)

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# Compulsory Electives Cell Biology, Genetics and Bioinformatics

(10 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 53 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module	e title				Abbreviation
Cell Biology - Focus signal transduction and stem cells			03-98-PZB1-172-m01		
Module	e coord	inator		Module offered by	
Wokinรู ne	g Group	Molecular Genetics of th	e Faculty of Medici-	Faculty of Medicine	
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	May not be combine	ed with 03-98-PZB2 o	or 03-98-PZB3.
Conten	ts				
Becom pics ar Analys apopto Applica	ing fam e the st es of ce osis, dif ation of	iliar with basic cell biolo ructural organization of e Illular processes such as ferentiation, regulation o the necessary technique	gical principles via ha eukaryotic cells and d reorganization of the f transcription, stimu	ands-on training and lifferentiation of ster cytoskeleton under lation of signaling p	l individual seminars. Major to- n cells into different cell types. stress conditions, proliferation, athways and cellular responses.
Intend	ed learı	ning outcomes			
Probler ply bas ding th ses. In ture in	m-orien sic work e mole depend a semin	ted handling of eukaryot ing techniques to analyz cular basis of cell biology ent extraction of relevant nar. Acquiring the ability	ic cells under sterile e cells. Checking, eva as well as cellular m t information and pre to discuss scientific a	conditions as well as aluating and error an alfunctions and the sentation of selecter and ethical aspects o	s the ability to independently ap- alysis of the results. Understan- ir significance for disease proces- d examples of the current litera- of stem cell biology.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (5) + Module	S (1) e taugh	t in: German/English			
Metho module is	<b>d of ass</b> s creditab	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
a) writt b) oral Studer Langua	en exar examin its will l ige of a	nination (45 to 90 minute ation of one candidate e be informed about the typ ssessment: German and/	es) or ach (20 to 30 minute oe and length of asse ⁄or English	s) essment at the begin	ning of the course.
Allocat	ion of p	olaces			
Biome	dizin (B	iomedicine) Bachelor's: 1	18 places.		
Additio	onal inf	ormation			
Additic	onal info	ormation on module dura	tion: 2 weeks, full tin	ne.	
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module	e appea	irs in			
Bachel Bachel	or's deg or's deg or's deg	gree (1 major) Biomedicir gree (1 major) Biomedicir groo (1 major) Biomedicir	ne (2015) ne (2018) no (2020)		
Dachel	bachelor's degree (1 major) biomedicine (2020)				

Module title			Abbreviation		
Cell Biology - Focus Cytoskeleton and Microscopic Imaging			03-98-PZB2-202-m01		
Module	e coord	inator		Module offered by	
Institut sorship	e of Ex o of Mo	perimental Biomedicine, lecular Microscopy	holder of the Profes-	Faculty of Medicine	
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	May not be combine	ed with 03-98-PZB1 o	or 03-98-PZB3.
Conten	ts				
Becom structu sis of c tation o	ing farr ral orga ytoskel of the re	iliar with basic cell biolo anisation, the stability an letal components. Compl esults into the dynamic p	gical principles via ha d the dynamics of the ementary imaging us rocesses of the cytos	ands-on training and e cytoskeleton in eu ing modern microsc keleton living cells.	d seminars. Major topics are the karyotic cells. Biochemical analy- opic approaches and implemen-
Intende	ed lear	ning outcomes			
Probler ques fo zing tai croscoj se deve current	m-orien or the a rgets fo pic ima elopme : literati	ted handling of eukaryot nalysis of the cellular cyt r drugs affecting the cyto ging for the analysis of th nt. Independent extractio ure.	ic cells under sterile o oskeleton. Understar oskeleton. Principles a ne cytoskeleton. Cellu on of relevant informa	conditions and undending the molecular and limitations of cla and rmalfunctions an ation and presentation	erstanding principles of techni- basis of cell biology and recogni- assical and modern forms of mi- d their significance for the disea- on of selected examples of the
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (5) + Module	S (1) e taugh	t in: German/English			
Metho module is	<b>d of ass</b> s creditab	<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
a) writt b) oral Langua	en exai examir ige of a	mination (45 to 90 minut nation of one candidate e ssessment: German and,	es) or ach (20 to 30 minute /or English	s)	
Allocat	ion of p	olaces			
Bachel	or's Bio	omedicine: 12 places			
Additio	nal inf	ormation			
Duratio	on: 2 we	eeks			
Worklo	ad				
150 h					
Teaching cycle					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	e appea	ars in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title			Abbreviation		
Cell Biology - Focus Immunology				03-98-PZB3-202-m01	
Module	e coord	inator		Module offered by	
Institut Departi	e of Ex ment of	perimental Biomedicine, f Dermatology, Venerolog	University Hospital, y and Allergology	Faculty of Medicine	
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	May not be combine	ed with 03-98-PZB1 c	or 03-98-PZB2.
Conten	ts				
The ma using q using in cell trac	in topio uantita mmuno cking a	cs are: Cell culture of adh ative real-time PCR and fl logical techniques such nd time-lapse microscop	erent cells under ste uorescence reporter g as Western blot, FAC y, as well as preparin	rile conditions, gene genes, identification 5 and ELISA, investig g and staining of his	e expression analysis at RNA level and quantification of proteins gating cell migration using single stological sections.
Intende	ed learn	ning outcomes			
Unders cable n ration c gical sk remem	tanding nethod of the re kills in o ber bas	g and self-reliant applica s for the analysis of gene esults with error analysis cell and molecular biolog sic cellular and immunolo	tion of basic cell and expression and cell . The aim of the quali y in the context of inf ogical principles.	molecular biologica migration. Analysis, fication is to acquire lammatory processe	l techniques and generally appli- evaluation and (critical) conside- basic specialist and methodolo- es, as well as to understand and
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (5) + 2 Module	S (1) e taugh	t in: German/English			
Method module is	<b>d of ass</b> creditab	<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
a) writt b) oral Langua	en exar examin ge of a	nination (45 to 90 minut ation of one candidate e ssessment: German and,	es) or ach (20 to 30 minute /or English	s)	
Allocat	ion of p	olaces			
Biomed	dizin (B	iomedicine) Bachelor's:	8 places.		
Additio	nal inf	ormation			
Duratio	n: 2 we	eks			
Workload					
150 h					
Teaching cycle					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	e appea	irs in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title			Abbreviation		
Introduction to Genetics and Human Genetics				03-98-PGH-202-m01	
Module	coord	inator		Module offered by	
holder chemis netics a	of the ( try and and Res	hair of Clinical Biochemi holder of the Chair of Ne search Center for Infectio	stry and Pathobio- urobiology and Ge- us Diseases	Faculty of Medicine	
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 by gene stics, g	ction to etic inst enetic t	o human genetics, genera tability, neurodegenerati tools in Drosophila.	al genetics and genet ve diseases, heredita	ic diagnostics in hur ry cancer. Practical p	nan diseases: diseases caused oart: molecular genetic diagno-
Intende	ed learr	ning outcomes			
Studen diagnos ses. Ac	ts will a stics ar quiring	acquire a fundamental kr nd genetic counselling. Th the ability to analyze un	owledge of human a ney will develop an a d interpret diagnostic	nd Drosophila genet dvanced knowledge c data. Independent	ics as well as molecular genetic of the genetics of selected disea- presentation of results.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (3)				
Methoo module is	l of ass creditab	e <b>ssment</b> (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written riments Each ex ments o	examir (appro perime can eao	nation (45 to 90 minutes) ox. 15 minutes) and writte ent comprises preparation in be repeated once.	and successful comp en examination (90 m n, performance and e	oletion of exercises ( inutes) valuation. Test as w	(ungraded), oral test during expe- ell as performance of experi-
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h	150 h				
Teaching cycle					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	appea	irs in			
Bachelo	Bachelor's degree (1 major) Biomedicine (2020)				

Bachelor's with 1 major Biomedicine (2020	))	
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Module title				Abbreviation	
Introduction to Bioinformatics			07-BI-202-m01		
Module	e 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				
Fundan	nental	principles of bioinformati	ics.		
Intende	ed lear	ning outcomes			
Studen	ts are p	proficient in methods for	the analysis of DNA a	nd protein database	25.
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (0.5)	+ Ü (4)				
Method	d of ass	<b>Sessment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
module is	creditab	le for bonus)	- · · ·		
Log (ap	prox. 3	o pages)			
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	urs in			
Bachel	or's de	gree (1 major) Biomedicir	ne (2020)		
Master	's degr	ee (1 major) Computer Sc	ience (2021)		
Master	Naster's degree (1 major) Mathematics (2022)				



## **Advanced Compulsory Electives**

(20 ECTS credits)

Students may also take modules from the areas "Zellbiologie, Genetik und Bioinformatik" ("Cell Biology, Genetics and Bio Informatics") and "Infektiologie und Immunologie" ("Infection and Immunity").

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Module title				Abbreviation		
Practical Course in Immunology and Virology			03-98-PIV-202-m01			
Module	e coord	inator		Module offered by		
Institut	e of Vir	ology and Immunobiol	ogy	Faculty of Biology, I	Faculty of Medicine	
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					
Part im The foc tic anal Part vir on of co fect, de	munolo us is o lyzes to ology: I ells wit etermin	by: Learning the basic n antigen uptake by de o determine the activat Learning of virological h wild-type and transgo ation of virus titer and	s of immunology throug ndritic cells and their a ion of the T cells. basic principles by mea enic viruses, morpholog tropism, investigation of iral infections	gh practical exercise ntigen presentation ans of practical exerc gical examination of of the functionality o	s with different imm to T cells. Subseque ises. The focus is or infected cells with c f antiviral antibodies	une cells. nt time-kine- n the infecti- ytopathic ef- s and of the
Intende						
Intended learning outcomes Part immunology: Professional work with primary immune cells under sterile conditions and the ability to inde- pendently apply basic immunological working methods. Mastering the basic safety aspects of working in the S2 laboratory when dealing with pathogen-stimulated cell cultures and principles of immunological methods in re- search. Checking, analyzing, interpreting, evaluating and classifying/judging the results. Allocation of the mole- cular basis of the immunoregulatory mechanisms, their consequences and causal impact on immune tolerance and immune stimulation. Part virology: Expert work with viruses and eukaryotic cells under sterile conditions as well as the ability to inde- pendently apply basic working methods of virology. Mastery of the basic safety aspects of working in an S2 labo- ratory with infectious agents as well as the concepts of genetic safety and principles of virological methods in re- search and diagnostics. Review, analyze, interpret, evaluate and classify/assess results. Assign the molecular basis of viral infections, their consequences and causal site in the disease process.						
P (5) + 3	S (1)			many		
Module	e taugh	t in: German/English				
Methoo module is	<b>d of ass</b> creditab	<b>sessment</b> (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if no	t every semester, informati	on on whether
a) Writt b) Log ( c) Oral	en exa (10 to 2 examir	mination (45 to 90 min o pages) or nation of one candidate	utes) or e each (20 to 30 minute	s)		
Allocat	ion of <b>p</b>	olaces				
Additional information						
Duration: 2 Weeks						
Workload						
150 h						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	urs in				
Bachelor's	with 1 ma	or Biomedicine (2020)	JMU Würzburg data record B	• generated 29-Jun-2025 • e achelor (180 ECTS) Biomediz	in - 2020	page 60 / 106

Bachelor's degree (1 major) Biomedicine (2020)

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Module title				Abbreviation	
Practica	Practical Course in Molecular Infection Biology       03-98-PMIB-202-m01				
Module	coord	inator		Module offered by	
Institut	e of Mo	lecular Infection Biology		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				
among says an regulati with da	other t id mole ion me tabase	hings, methods for ident cular methods. Furtherm chanisms investigated. A s is practiced. Virulence	ifying bacterial pathogen ore, the genetic caus Aethods for determini factors that are impo	gens, physiological ses of antibiotic resis ing the human micro rtant in the host-pat	tests, biochemical detection as- stance are determined and gene bbiome are learned and working hogen interaction are analyzed.
Intende	ed learn	ning outcomes			
Acquisi siologic databas to solve	tion of cal prop ses. Ab e comp	professional competenc perties and to understand ility to discuss general a lex problems based on s	es to characterize bad d their role in disease spects of infectious d cientific data. Ability	cterial pathogens, to processes. Ability t liseases in the socie to present scientific	o classify their virulence and phy- o analyze sequencing data using ty. Methodological competence work to others.
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (5) + 9 Module	S (1) e taugh	t in: German/English			
Methoo module is	<b>l of ass</b> creditab	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
a) Writt b) Log ( c) oral e	en exa (10 to 2 examin	mination (45 to 90 minut o pages) or ation of one candidate e	es) or ach (20 to 30 minutes	s)	
Allocat	ion of p	olaces			
Additional information					
Duration: 2 weeks					
Workload					
150 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	irs in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title				Abbreviation	
Practical Course in Molecular Microbiology					03-98-PM0Mi-202-m01
Module	coord	inator		Module offered by	
Institut	e of Mo	olecular Infection Biology	_	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				
Basic m tion, dia gens, a termina netic m	agnost nalysis ation of utatior	ological experiments are ic determination of patho of growth curves, detern antibiotic resistance, fai as and their detection, an	carried out. The inter ogens, staining and m nination of the cell cc miliarization with pro valysis of gene regula	nship includes metri hicroscopy of gramp bunt of bacteria, met cesses of horizontal tion.	ods of disinfection and steriliza- ositive and gramnegative patho- abolic reactions in bacteria, de- gene transfer, generation of ge-
Intende	ed leari	ning outcomes			
The stu are able thodolo own ex	dents a e to des ogical e perime	acquire the ability to app sign, carry out and analys rrors. The students are a ntal data.	ly microbiological and se scientific experime ble to develop strate	d molecular method ents. They are able to gies to solve probler	s with pathogenic bacteria. They o assess experimental and me- ns. They can analyse and present
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (5) + S Module	5 (1) e taugh	t in: German/English			
Method module is	<b>l of ass</b> creditab	<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
a) written examination (45 to 90 minutes) or b) log (10 to 20 pages) or c) oral examination of one candidate each (20 to 30 minutes) Language of assessment: German or English					
Allocat	ion of p	olaces			
Additional information					
Duration: 2 weeks					
Workload					
150 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	appea	irs in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title				Abbreviation		
Practical Course in Pharmacology and Toxicology 03-9				03-98-PPT-202-m01		
Module	e coord	inator		Module offered by		
holder	of the (	hair of Pharmacology an	d Toxicology	Faculty of Biology		
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					
Studen fection, ces, in	ts learr , recept vitro te	n selected pharmacologic or pharmacology, recept sts for cell toxicity or the	al and toxicological v or-signal transductio characterisation of e	working techniques, n analysis and effec nzymes.	including cell culture, cell trans- ts of pharmacological substan-	
Intende	ed learr	ning outcomes				
At the e They wi target p pender	end of t ill also proteins ntly wor	he course, students will l be able to perform micro s and cell toxicity analyse king out and presenting	be able to perform ro scopic analyses of sa es. Checking, interpre the results in an acco	utine pharmacologic imples, the function ting and evaluation ompanying seminar.	cal and toxicological techniques. al characterisation of selected of errors in the results and inde-	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
P (3) + 1 Module	S (1) e taugh	t in: German/English				
Methoo module is	<b>l of ass</b> creditab	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	
Present	tation c	of pracitcal work (approx.	30 minutes)			
Allocat	ion of p	olaces	-			
Additional information						
Workload						
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				
Bachel	Bachelor's degree (1 major) Biomedicine (2020)					

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Module title				Abbreviation	
Pathophysiology and Pathobiochemistry   03-98-PPC-202-m01					03-98-PPC-202-m01
Module	e coord	inator		Module offered by	
holder	of the C	Chair of Experimental Bio	medicine	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				
The lec cardiol biocher ment a	ture se ogy, en mical a nd tran	ries will cover the pathob docrinology, pneumolog nd molecular causes of t slational research.	viochemistry and patl y, psychiatry and asp hese diseases and th	nophysiology of sele ects of clinical mole le challenges for res	cted diseases from nephrology, cular biology. The focus is on the pective clinical diagnosis, treat-
Intende	ed learr	ning outcomes			
Unders portanc mus of	tanding ce for d diseas	g and remembering the p isease processes. Under es are used in clinical dia	athobiochemical and standing how the pat agnosis and treatmer	l pathophysiological hobiochemical and it.	bases of diseases and their im- pathophysiological mechanis-
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) + Module	V (1) e taugh	t in: German/English			
Methoo module is	<b>d of ass</b> creditab	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
a) Writt b) oral	en exa examin	mination (45 to 90 minut ation of one candidate e	es) or ach (20 to 30 minute	s)	
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Workload					
150 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	e appea	irs in			
Bachelor's degree (1 major) Biomedicine (2020)					

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 65 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title				Abbreviation	
Introduction to Methods in Experimental Biomedicine				03-98-RVZ-202-m01	
Module	coord	inator		Module offered by	
holder	of the O	Chair of Experimental Bio	medicine	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				
Fundam questio dies. Tr	nental l ns of p ansger	knowledge and analytica Iatelet physiology and m nic mouse models are use	l approaches of expe egakaryopoiesis. Em ed to elucidate the in	rimental biomedicin phasis is put on the terplay underlying (p	e are taught based on selected generation and use of antibo- oatho-)physiological processes.
Intende	d lear	ning outcomes			
use of t product Method Social o tation o After pa ring the clonal a	Professional competence: General knowledge on the generation and application of antibodies, generation and use of transgenic mouse models and acquisition of specialized knowledge on the study of platelet function and production. Methodological competence: Analyzing and evaluating scientific figures. Social competence: The communicative competence is promoted by independent research, analysis and presen- tation of current literature (in English) in the accompanying seminar. After participation in the module courses, students will be able to apply the experimental techniques learned du- ring the course. Furthermore, they will be able to analyze and evaluate experimental data obtained using mono-				
Courses	<b>5</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (6) Module	taugh	t in: German/English			
Method module is	l <b>of ass</b> creditab	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
a) writte b) Log ( c) oral e Langua	en exar 10 to 2 examin ge of a	nination (45 to 90 minute o pages) or ation of one candidate ea ssessment: German or Er	es) or ach (20 to 30 minute: nglish	5)	
Allocati	ion of p	olaces			
Additional information					
Duration: 2 weeks					
Workload					
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	ars in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation
Practic	Practical Course in a Research Laboratory   03-98-PF2-152-m01				
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
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				
Workin and en experin	g in a r ables a nents a	esearch laboratory under n intensive introduction re documented in a proto	individual supervisio to special methods o ocol.	on. The topic will var f research and readi	y according to the lab selected ng of the relevant literature. The
Intende	ed lear	ning outcomes			
Studen They be	ts expa ecome	and their repertoire of exp familiar with workflows a	perimental methods a nd organisational pa	and learn how to criti tterns in research lal	ically examine experimental data. boratories.
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (6) Module	e taugh	t in: German/English			
Method module is	<b>d of ass</b> creditab	<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
practica Langua	al assig ge of a	nment with presentation ssessment: German or Er	ı (approx. 10 minutes nglish	) and log (approx. 10	pages)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Additio	nal info	ormation on module dura	ition: 3 to 4 weeks, fu	Ill time.	
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)		
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
Bachelor's degree (1 major) Biomedicine (2020)					

Imaging methods in life-sciences         O8-BGV-202-m01           Module coordinator         Module offered by           holder of the Chair of Biochemistry         Chair of Biochemistry           ECTS         Method of grading         Only after succ. compl. of module(s)           5         numerical grade         -           Duration         Module level         Other prerequisites           1 semester         undergraduate         -           Contents         The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. Afterwards the principles of different variants of superresolution light microscopy will be introduced. Typical applications in cells and the temporal and spatial resolution potential of the different methods play a special role. Subsequently, the principles of electron microscopy will be discussed and the functionality of a light microscopy will be discussed in the offic microscopy methods such as X-ray microscopy. scan undear resonance microscop procemethods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the individual methods are. Finally, selected imaging methods from the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the individual methods are. Finally, selected imaging methods from the clinical basics.           Thended learning outcomes         Intended learning outcomes         Interate	Module title Abbreviation					
Module coverinator         Module offered by           holder of the Chair of Biochemistry         Chair of Biochemistry           ECTS         Method of grading         Only after succ. comp. of module(s)           5         numerical grade            Duration         Module level         Other prerequisites           1 semester         undergraduate            Contents             The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. After terwards the principles of different variants of superresolution light microscopy will be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution potential of the different torscopy and structural biology will be discussed. As far as possible, parallels to light microscopy will be developed. Typical electron microscopic scapplications in cell biology and structural biology will be discussed. As far as possible, parallels to light microscopy will be discussed. As far as possible, parallels are dawn to the microscopic procedures. In the seminar part some aspects of the different methods will be developed. Typical electron microscopic spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field X-ray tomography, nuclear spin tomography and ultrasound) for the imaging of the rentorical basic.           Intended learning outcomes         The participants learn the functionalities of different methods will be decee	Imaging methods in life-sciences 08-BGV-202-m01					
holder of the Chair of Biochemistry       Chair of Biochemistry         ECTS       Method of grading       Only after succ. compl. of module(s)         5       numerical grade          Duration       Module level       Other prerequisites         1 semester       undergraduate          Contents         The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscopy will be explained. Afterwards the principles of different variants of superresolution light microscopy (transmission electron microscopy and scanning electron microscopy: complications in cell biology and structural biology will be discussed. As far as possible, parallels to light microscopy will be discubled. Typical electron microscopy, scanning probe microscopy and nuclear resonance microscop will be ediscuble out how the fields of application differ from those of classical microscop will be discubled out how the fields of application differ from those of classical microscop methods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selectures, in the seminarp part and spatial resolution capabilities or the microscopic procedures, in the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the imaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminarp art some aspects of the different methods. In order to apply what they have learned independently, the participants will and ultrasound for the imaging methods from the curestal basics.	Module coordinator	Module offered by				
ECTS         Method of grading         Only after succ. compl. of module(s)           5         numerical grade            Duration         Module level         Other prerequisites           1 semester         undergraduate            Contents             The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscopy will be explained. Afterwards the principles of different variants of superesolution light microscopy up bit be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution loght microscopy will be discussed and star as possible, parallels to light microscopy will be developed. Typical electron microscopy and scanning electron microscopy, scanning probe microscopy and nuclear resonance microscop y will be diveduced. It will be worked out how the fields of application differ from those of classical microscop puthods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the litterature and by applying the theoretical basics.           Intendel learning outcomes	holder of the Chair of Biochemistry		Chair of Biochemist	try		
5         numerical grade            Duration         Module level         Other prerequisites           1 semester         undergraduate            Contents            The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. Afterwards the principles of different variants of supersectolution light microscops up (transmission electron microscop) will be discussed. As far as possible, parallels to light microscops will be discussed. As far as possible, parallels to light microscops up will be developed. Typical electron microscopic applications in cell biology and structural biology will be discussed as far as possible, the indice assical microscop procedures. In the seminar part some aspects of the different mathods such as X-ray microscopy. Scanning probe microscopy and nuclear resonance microscop puthods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field X-ray tomography, nuclear spin tomography and ultrasound) for the limaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminar part some aspects of the different mathods. Will be doepened by case studies from the lite rature and by applying the theoretical basics.           Intendel learning outcomes         Intendel learning outcomes           Intende learning outcomes         Intende learning outcomes           Intendel learning outcomes of the methods and understand general principles of imaging techniques. Building o	ECTS Method of grading	Only after succ. con	npl. of module(s)			
Duration         Module level         Other prerequisites           1 semester         undergraduate            Contents	5 numerical grade					
1 semester       undergraduate          Contents         The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. Afterwards the principles of different variants of superresolution light microscopy will be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution potential of the different methods play a special role. Subsequently, the principles of electron microscopy (transmission electron microscopy and scanning electron microscopy, scanning probe microscopy and nuclear resonance microscopy will be diveloped. Typical electron microscopy, scanning probe microscopy and nuclear resonance microscop per will be diveloped. Typical electron microscopy, scanning probe microscopy and nuclear resonance microscop per thods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminar part some aspects of the different imaging techniques. They will be able to classify typical advantages and limitations of the methods and understand general principles of imaging techniques. Building on this understanding, they can easily evaluate and classify other methods. In other to apply what they have learned independently, the participants will analyse a primary publication independent primary literature in a different than German)         V colspan="2">V colspan="2">V colspan="2">V colspan="2">V colspan="2">V colspan="2"         A different transmitter of the theresof classify typical advantages and limitations of the methods and	Duration Module level	Other prerequisites				
Contents         The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution potential of the different withods play a special role. Subsequently, the principles of lectron microscopy (transmission electron microscopy) will be developed. Typical electron microscopy and scanning electron microscopy, scanning probe microscopy. Then the principles of more specific microscopy methods such as X-ray microscopy, scanning probe microscopy. Then the principles of more specific microscopy methods such as X-ray microscopy, scanning probe microscopy. Then the principles of more specific microscopy methods such as X-ray microscopy, scanning probe microscopy and nuclear resonance microscop puthods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the imaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminar part some aspects of the different methods will be deepened by case studies from the lite rature and by applying the theoretical basics.         Intended learning outcomes         The participants learn the functionalities of different imaging techniques. They will be able to classify typical ad vantages and limitations of the methods and understand general principles of imaging techniques. Building on the understanding, they can easily evaluate and classify other methods. In order to apply what they have learned independently, the participants will analyse a primary publication independently and answer questions on the	1 semester undergraduate					
The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. Afterwards the principles of different variants of superresolution light microscopy will be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution potential of the different methods play a special role. Subsequently, the principles of electron microscopy and scanning electron microscopy and scanning electron microscopy is canning probe microscopy and nuclear resonance microscop y will be developed. Typical electron microscopy is canning probe microscopy and nuclear resonance microscop y will be introduced. It will be worked out how the fields of application differ from those of classical microscop methods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selection ingenethods from the clinical field (X-ray tomography, nuclear spin tomography and ultrasound) for the imaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminar part some aspects of the different methods will be deepened by case studies from the lite rature and by applying the theoretical basics.  Intended learning outcomes The participants learn the functionalities of different imaging techniques. They will be able to classify typical ad vantages and limitations of the methods and understand general principles of imaging techniques. Building on this understanding, they can easily evaluate and classify other methods. In order to apply what they have learned independently, the participants will analyse a primary publication independently and answer questions on the imaging methods in writing. The participants will acquice competences in dealing with primary literature in a foreign lan-guage. By working on the questions, the participants will acquice co	Contents					
Courses (type, number of weekly contact hours, language — if other than German) V (2) + S (1) Method of assessment (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 90 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate) Language of assessment: German or English Assessment offered: Once a year, winter semester Allocation of places  Additional information	The module "Imaging Techniques in the Life Sciences" contains a lecture part and a seminar part. In the lecture part basic concepts of optics will be discussed and the functionality of a light microscope will be explained. Afterwards the principles of different variants of superresolution light microscopy will be introduced. Typical applications for the study of dynamic processes in cells and the temporal and spatial resolution potential of the different methods play a special role. Subsequently, the principles of electron microscopy (transmission electron microscopy and scanning electron microscopic applications in cell biology and structural biology will be discussed. As far as possible, parallels to light microscopy will be discussed and the temporal and electron microscopy. Then the principles of more specific microscopy methods such as X-ray microscopy, scanning probe microscopy and nuclear resonance microscopy will be introduced. It will be worked out how the fields of application differ from those of classical microscopy methods and what the temporal and spatial resolution capabilities of the individual methods are. Finally, selected imaging methods from the clinical field (X-ray tomography, nuclear spin tomgraphy and ultrasound) for the imaging of entire organisms will be discussed. As far as possible, parallels are drawn to the microscopic procedures. In the seminar part some aspects of the different methods will be deepened by case studies from the literature and by applying the theoretical basics.  Intended learning outcomes The participants learn the functionalities of different imaging techniques. They will be able to classify typical advantages and limitations of the methods and understand general principles of imaging techniques. Building on this understanding, they can easily evaluate and classify other methods. In order to apply what they have learned independently, the participants will analyse a primary publication independently and answer questions on the imaging methods in writing. The part					
Wethod of assessment (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 90 minutes) or         b) oral examination of one candidate each (20 to 30 minutes) or         c) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate)         Language of assessment: German or English         Assessment offered: Once a year, winter semester         Allocation of places            Additional information	V(2) + S(1)	, language — If other than Ger	man)			
module is creditable for bonus)         a) written examination (approx. 45 to 90 minutes) or         b) oral examination of one candidate each (20 to 30 minutes) or         c) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate)         Language of assessment: German or English         Assessment offered: Once a year, winter semester         Allocation of places            Additional information	Method of assessment (type, scope, lang	uage — if other than German.	examination offered — if no	t every semester, informat	ion on whether	
a) written examination (approx. 45 to 90 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate) Language of assessment: German or English Assessment offered: Once a year, winter semester Allocation of places  Additional information	module is creditable for bonus)					
Allocation of places Additional information	a) written examination (approx. 45 to 90 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate) Language of assessment: German or English Assessment offered: Once a year, winter semester					
Additional information	Allocation of places					
Workload	Workload					
150 h	150 h					
Bachelor's with 1 major Biomedicine (2020)       JMU Würzburg • generated 29-Jun-2025 • exam. reg.       page 68 / 106         data record Bachelor (180 ECTS) Biomedizin - 2020       Page 68 / 106       Page 68 / 106	Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg data record B	• generated 29-Jun-2025 • e achelor (180 ECTS) Biomediz	xam. reg. in - 2020	page 68 / 106	

#### Teaching cycle

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

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#### Module appears in

Bachelor's degree (1 major) Biomedicine (2020) Bachelor's degree (1 major) Biochemistry (2022)

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	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title				Abbreviation	
Introduction to Neurobiology 03-98-PGN-202-m01				03-98-PGN-202-m01	
Module	e coord	inator		Module offered by	·
holder	of the (	Chair of Clinical Neurobio	logy	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			
Conten	ts				
such as nervou mental tations biologi	s synap s syste approa of curr cal top	otic plasticity, ion channe m: symptoms, diagnosis, aches will be discussed a ent research topics relate ics.	ls, RNA biology in ne , therapeutic options and strengthened in a ed to lecture topics fu	uroscience, neural s Methodological con ccompanied semina irther strengthens th	tem cells, various diseases of the mpetence with regard to experi- ars and practical lessons. Presen- ie acquired knowledge of neuro-
Intende	ed lear	ning outcomes			
Studen structu to critic	its who re and cal refle	successfully completed function of the nervous s ect current research topic	this module are able ystem. Using oral pre s and to classify data	to remember a fund sentations, student of current publicati	amental knowledge about the s have received the competence ons into the right context.
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	S (3)				
Metho module is	<b>d of ass</b> s creditab	<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
written	exami	nation (90 minutes) and	successful completio	n of seminar/exercis	se
Allocat	ion of <sub>l</sub>	olaces			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2020)		
Bachelor's degree (1 major) Biochemistry (2022)					

Module	e title		Abbreviation					
Selecte	ed Cour	ses from Related Study I	03-98-VVER-202-m01					
Module	e coord	inator		Module offered by				
Dean of Studies Biomedizin (Biomedic			ne) Faculty of Biology					
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)				
5	nume	rical grade						
Duration		Module level	Other prerequisites					
1 semester		undergraduate	Prior approval from degree programme coordinator required.					
Contents								
Students broaden their insights into related disciplines and thereby complement the teaching portfolio of the program.								
Intended learning outcomes								
Students understand the approaches of related disciplines and are able to apply corresponding concepts and methods to problems in translational medicine. They possess enhanced cooperation and communication skills across disciplinary boundaries.								
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)				
V (3)								
<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 (45 to 90 minutes) or b) log (10 to 20 pages) or c) oral examination of one candidate each (20 to 30 minutes)								
Allocation of places								
Additional information								
Workload								
150 h								
Teaching cycle								
Referred to in LPO I (examination regulations for teaching-degree programmes)								
Module appears in								
Bachelor's degree (1 major) Biomedicine (2020)								

Module	e title		Abbreviation					
Cell Bi	ology -	Focus signal transductio		03-98-PZB1-172-m01				
Module	e coord	inator		Module offered by				
Wokinรู ne	g Group	Molecular Genetics of th	e Faculty of Medici-	Faculty of Medicine				
ECTS	CTS Method of grading		Only after succ. com	npl. of module(s)				
5	nume	rical grade						
Duration Mod		Module level	Other prerequisites	equisites				
1 semester undergraduate		May not be combined with 03-98-PZB2 or 03-98-PZB3.						
Contents								
Becoming familiar with basic cell biological principles via hands-on training and individual seminars. Major to- pics are the structural organization of eukaryotic cells and differentiation of stem cells into different cell types. Analyses of cellular processes such as reorganization of the cytoskeleton under stress conditions, proliferation, apoptosis, differentiation, regulation of transcription, stimulation of signaling pathways and cellular responses. Application of the necessary techniques.								
Intended learning outcomes								
Problem-oriented handling of eukaryotic cells under sterile conditions as well as the ability to independently ap- ply basic working techniques to analyze cells. Checking, evaluating and error analysis of the results. Understan- ding the molecular basis of cell biology as well as cellular malfunctions and their significance for disease proces- ses. Independent extraction of relevant information and presentation of selected examples of the current litera- ture in a seminar. Acquiring the ability to discuss scientific and ethical aspects of stem cell biology.								
Courses (type, number of weekly contact hours, language — if other than German)								
P (5) + S (1) Module taught in: German/English								
<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 (45 to 90 minutes) or b) oral examination of one candidate each (20 to 30 minutes) Students will be informed about the type and length of assessment at the beginning of the course. Language of assessment: German and/or English								
Allocation of places								
Biomedizin (Biomedicine) Bachelor's: 18 places.								
Additional information								
Additional information on module duration: 2 weeks, full time.								
Workload								
150 h								
Teaching cycle								
Referred to in LPO I (examination regulations for teaching-degree programmes)								
Module appears in								
Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Biomedicine (2020)								
Bachelor's degree (1 major) Biomedicine (2020)								
Module title					Abbreviation			
-----------------------------------------------------------------	-------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--		
Cell Bio	ology -	Focus Cytoskeleton and	Microscopic Imaging		03-98-PZB2-202-m01			
Module	e coord	inator		Module offered by				
Institut sorship	e of Ex o of Mo	perimental Biomedicine, lecular Microscopy	holder of the Profes-	Faculty of Medicine				
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	May not be combine	ed with 03-98-PZB1 o	or 03-98-PZB3.			
Conten	ts							
Becom structu sis of c tation o	ing farr ral orga ytoskel of the re	iliar with basic cell biolo anisation, the stability an letal components. Compl esults into the dynamic p	gical principles via ha d the dynamics of the ementary imaging us rocesses of the cytos	ands-on training and e cytoskeleton in eu ing modern microsc keleton living cells.	d seminars. Major topics are the karyotic cells. Biochemical analy- opic approaches and implemen-			
Intende	ed lear	ning outcomes						
Probler ques fo zing tai croscoj se deve current	m-orien or the a rgets fo pic ima elopme : literati	ted handling of eukaryot nalysis of the cellular cyt r drugs affecting the cyto ging for the analysis of th nt. Independent extractio ure.	ic cells under sterile o oskeleton. Understar oskeleton. Principles a ne cytoskeleton. Cellu on of relevant informa	conditions and undending the molecular and limitations of cla and rmalfunctions an ation and presentation	erstanding principles of techni- basis of cell biology and recogni- assical and modern forms of mi- d their significance for the disea- on of selected examples of the			
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
P (5) + Module	S (1) e taugh	t in: German/English						
Metho module is	<b>d of ass</b> s creditab	<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			
a) writt b) oral Langua	en exai examir ige of a	mination (45 to 90 minut nation of one candidate e ssessment: German and,	es) or ach (20 to 30 minute /or English	s)				
Allocat	ion of p	olaces						
Bachel	or's Bio	omedicine: 12 places						
Additio	nal inf	ormation						
Duratio	Duration: 2 weeks							
Workload								
150 h								
Teaching cycle								
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	e appea	ars in						
Bachelor's degree (1 major) Biomedicine (2020)								

Module title					Abbreviation	
Cell Bio	ology -	Focus Immunology			03-98-PZB3-202-m01	
Module	e coord	inator		Module offered by		
Institut Departi	e of Ex ment of	perimental Biomedicine, f Dermatology, Venerolog	University Hospital, y and Allergology	Faculty of Medicine		
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	May not be combine	ed with 03-98-PZB1 c	or 03-98-PZB2.	
Conten	ts					
The ma using q using in cell trac	in topio uantita mmuno cking a	cs are: Cell culture of adh ative real-time PCR and fl logical techniques such nd time-lapse microscop	erent cells under ste uorescence reporter g as Western blot, FAC y, as well as preparin	rile conditions, gene genes, identification 5 and ELISA, investig g and staining of his	e expression analysis at RNA level and quantification of proteins gating cell migration using single stological sections.	
Intende	ed learn	ning outcomes				
Unders cable n ration c gical sk remem	tanding nethod of the re kills in o ber bas	g and self-reliant applica s for the analysis of gene esults with error analysis cell and molecular biolog sic cellular and immunolo	tion of basic cell and expression and cell . The aim of the quali y in the context of inf ogical principles.	molecular biologica migration. Analysis, fication is to acquire lammatory processe	l techniques and generally appli- evaluation and (critical) conside- basic specialist and methodolo- es, as well as to understand and	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
P (5) + 2 Module	S (1) e taugh	t in: German/English				
Method module is	<b>d of ass</b> creditab	<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	
a) writt b) oral Langua	en exar examin ge of a	nination (45 to 90 minut ation of one candidate e ssessment: German and,	es) or ach (20 to 30 minute /or English	s)		
Allocat	ion of p	olaces				
Biomed	dizin (B	iomedicine) Bachelor's:	8 places.			
Additio	nal inf	ormation				
Duratio	n: 2 we	eks				
Workload						
150 h						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	irs in				
Bachelor's degree (1 major) Biomedicine (2020)						

Module title					Abbreviation	
Introdu	Introduction to Genetics and Human Genetics				03-98-PGH-202-m01	
Module	coord	inator		Module offered by		
holder chemis netics a	of the ( try and and Res	hair of Clinical Biochemi holder of the Chair of Ne search Center for Infectio	stry and Pathobio- urobiology and Ge- us Diseases	Faculty of Medicine		
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 by gene stics, g	ction to etic inst enetic t	o human genetics, genera tability, neurodegenerati tools in Drosophila.	al genetics and genet ve diseases, heredita	ic diagnostics in hur ry cancer. Practical p	nan diseases: diseases caused oart: molecular genetic diagno-	
Intende	ed learr	ning outcomes				
Studen diagnos ses. Ac	ts will a stics ar quiring	acquire a fundamental kr nd genetic counselling. Th the ability to analyze un	owledge of human a ney will develop an a d interpret diagnostic	nd Drosophila genet dvanced knowledge c data. Independent	ics as well as molecular genetic of the genetics of selected disea- presentation of results.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) +	Ü (3)					
Methoo module is	l of ass creditab	e <b>ssment</b> (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written riments Each ex ments o	examir (appro (perime can eao	nation (45 to 90 minutes) ox. 15 minutes) and writte ent comprises preparation in be repeated once.	and successful comp en examination (90 m n, performance and e	oletion of exercises ( inutes) valuation. Test as w	(ungraded), oral test during expe- ell as performance of experi-	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Workload						
150 h						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	irs in				
Bachelor's degree (1 major) Biomedicine (2020)						

Module title					Abbreviation	
Introduction to Bioinformatics					07-BI-202-m01	
Module	e 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					
Fundan	nental	principles of bioinformati	ics.			
Intende	ed lear	ning outcomes				
Studen	ts are p	proficient in methods for	the analysis of DNA a	nd protein database	25.	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (0.5)	+ Ü (4)					
Method	d of ass	<b>Sessment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
module is	creditab	le for bonus)	- · · ·			
Log (ap	prox. 3	o pages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	or's de	gree (1 major) Biomedicir	ne (2020)			
Master	's degr	ee (1 major) Computer Sc	ience (2021)			
Master	Master's degree (1 major) Mathematics (2022)					



## **Key Skills Area** (20 ECTS credits)

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	data record Bachelor (180 ECTS) Biomedizin - 2020	



### **General Key Skills**

(5 ECTS credits)

In the area of general transferable skills, students may choose from the modules offered as part of the pool of general transferable skills (ASQ) of the University of Würzburg.

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### Subject-specific Key Skills

(15 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 79 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title				Abbreviation	
Framework conditions of biomedical laboratory work			boratory work		03-98-FSQ-GEN-202-m01
Module	e coord	inator		Module offered by	
Institut School	e of Mo of Life	olecular Infection Biology Sciences	and Graduate	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
1	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
1) Theo overvie that mu 2) Learn • p • g • ir • s	retical w of th ust be o n and r rinciple enesis ndividu pecific	fundamentals of genetic e areas of application of observed when handling l eflect es of good scientific pract and worldwide establish al people, (societal) grou regulations and procedu	engineering and gene genetic engineering. biomaterials, genetic tice ment of principles ups and institutions in res of dealing with m	etic engineering safe Introduction to the le ally modified organis nvolved, their roles a isconduct, especiall	ety requirements as well as an egal framework and regulations sms and pathogens. and interests y those of JMU
Intende	ed lear	ning outcomes			
Ad 1) Th Infection gorize b duct in Ad 2) Fa Self-con awaren	ne stud on Prote biomec the lat actual mpeter ess of	lents have knowledge of r ection Act and the Genetic lical work with regard to i poratory and are able to a competencies: Knowledg ncies: Ability to understar and attitude towards GSF	methods of genetic e c Engineering Safety ts hazard potential. T pply them in practice e of rules, knowledge nd GSP as a process i P.	ngineering as well as and Biological Subst The students rememb a of the current discu n science and startin	s the relevant regulations of the tances Ordinance. They can cate- per safety-relevant rules of con- assion on GSP worldwide ng point to develop one's own
Course	<b>S</b> (type, r	number of weekly contact hours, la	anguage — if other than Ger	man)	
V (1)					
Methoo module is	<b>d of ass</b> creditab	<b>sessment</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. 30 minut	es)		
Allocat	ion of <sub>l</sub>	olaces			
Additio	nal inf	ormation			
Students MUST take this module.					
Workload					
30 h					
Teachir	ng cycl	е			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	e appea	ars in			
Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation	
Laboratory Animal Sciences 1					03-98-FSQ-VTK1-152-m01	
Module	Module coordinator			Module offered by		
Animal	Welfar	e Officer of the University	of Würzburg	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Accordi on verte skills. T fare and TierSch	ing to t ebrates his me d Labo VersV.	he Animal Welfare Regula and cephalopods may o ans that both theoretical ratory Animal Science, th	ation Govering Experi- only be carried out by and practical expert e theoretical knowled	mental Animals (fier persons who posses ise must be acquired lge is taught, which	rSchVersV), animal experiments ss the required knowledge and d. In the lecture Animal Wel- is listed in Annex 1 Chapter 3	
Intende	ed lear	ning outcomes				
Studen passing intrinsi	ts acqu g the ex c value	lire the expertise for the t kam. Raising awareness of of life, and arguments fo	heoretical part for co of ethical issues relat or and against the use	nducting animal exp ed to the relationshi e of animals for scier	periments, which is certified by p between humans and animals, ntific purposes.	
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2)						
Methoo module is	<b>l of ass</b> creditab	<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. 90 minut	es)			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)			
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)			
васпец	Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation
Laborat	Laboratory Animal Sciences 2				03-98-FSQ-VTK2-152-m01
Module	e coord	inator		Module offered by	
holder mal We	of the ( lfare O	Chair of Experimental Bio fficer of the University of	medicine and Ani- Würzburg	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
ContentsAccording to the Animal Welfare Regulation Govering Experimental Animals (TierSchVersV), animal experiments on vertebrates and cephalopods may only be carried out by persons who possess the required knowledge and skills. This means that both theoretical and practical expertise must be acquired. In the lecture Animal Welfare and Laboratory Animal Science, the theoretical knowledge is taught, which is listed in Annex 1 Chapter 3 TierSchVersV. In terms of content, the module is based on EU Directive 2010/63 for acquiring expertise in animal welfare (for- merly FELASA Cat. B). Based on the background of the specific biology, anatomy and physiology of the animal species mouse, optionally also of the rat, which are recapitulated in the module in an application-oriented man- ner, the students* learn and practice exemplary essential animal experimental techniques with a focus on kee- ping and handling the animals, administration of substances, sampling of biological probes, anesthesia and an algesia through to surgical interventions and the painless and low-stress euthanasia of animals. In addition to the methodological and experimental principles, the module also focuses on acquiring in-depth knowledge of the german animal protection law and the TSchVersVO as well as the ability for an ethical consideration of ani- 					
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
V (2) +	P (1)				
Methoo module is	<b>d of ass</b> creditab	<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. 90 minut	es)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Equival	ent to	animal welfare qualificat	ion (GV-SOLAS (Socie	ety of Laboratory Anir	mals) / FELASA category B).
Worklo	ad				
90 h					
Teachir	ng cycl	e			

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

#### Module appears in

Bachelor's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Supplementary course Translational Medicine (2018) Bachelor's degree (1 major) Biomedicine (2018) Master's degree (1 major) Translational Medicine (2018) Bachelor's degree (1 major) Biomedicine (2020)

Module title					Abbreviation
Biostatistics					03-TM-BSTAT-202-m01
Module	Module coordinator			Module offered by	
Institut	e of Cli	nical Epidemiology and E	Biometry (ICE-B)	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
2	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate	May not be combine	ed with o3-TM-BIOM.	
Conten	ts				
Working stical te	g with t esting.	he statistical software Sl	PSS; preparation of d	ata; descriptive stat	istics; common methods of stati-
Intende	ed learr	ning outcomes			
The stu be data	dents a by nui	are able to prepare data t merical measures and pr	ables, import, export esent them graphical	, merge, transform a ly. They are familiar	nd recode data. They can descri- with basic tests of significance.
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
V (o.5) Module	+ S (o.g taugh	;) t in: German/English			
Method	l of ass	essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
oral exa	aminati	on in groups of up to 4 c	andidates (approx. 1	5 to 20 minutes per o	candidate)
Langua	ge of a	ssessment: German or Ei	nglish		
Allocat	ion of p	olaces			
Additio	nal info	ormation			
WORKIO	ad				
Poferred to in LPO L (maninghing angleting forteshing degree and the second sec					
			s for reaching-degree progra	iiiiies)	
Module	appea	rs in			
Bachelo	or's deg	gree (1 major) Biomedicir	ne (2020)		

Module title Abbreviation					Abbreviation	
Selected Courses from Biology and Medicine 1 03					03-98-FSQ-MB1-202-m01	
Module	coord	inator		Module offered by		
Dean of	f Studie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme o	coordinator required.	
Conten	ts					
Courses	s offere	ed by the Faculties of Bio	ogy or Medicine that	contribute to furthe	r professional qualification.	
Intende	ed learn	ning outcomes				
The stu king sk their pr	dents a ills, sei ofessio	acquire a broader range c rves for personal orientat onal qualification.	of knowledge that ena ion and development	ables them to enhan t of interests in the a	ce their interdisciplinary thin- irea of life sciences and improves	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2)						
Methoo module is	<b>d of ass</b> creditab	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	
a) Writt b) Log ( c) oral e	en exa 5 to 10 examin	mination (30 to 60 minut pages) or ation of one candidate e	es) or ach (15 to 30 minutes	;)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teaching cycle						
-						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
	-					
Module	e appea	ars in				
Bachelo	or's deg	gree (1 major) Biomedicir	ne (2020)			

Module title					Abbreviation	
Selecte	Selected Courses from Biology and Medicine 2				03-98-FSQ-MB2-202-m01	
Module	e coord	inator		Module offered by		
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme c	coordinator required.	
Conten	ts					
Course	s offere	ed by the Faculties of Bio	logy or Medicine that	contribute to furthe	r professional qualification.	
Intende	ed learr	ning outcomes				
The stu king sk their pr	dents a ills, ser ofessio	acquire a broader range c rves for personal orientat onal qualification.	of knowledge that ena ion and developmen	ables them to enhan t of interests in the a	ce their interdisciplinary thin- irea of life sciences and improves	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2)						
Methoo module is	<b>d of ass</b> creditab	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	
a) Writt b) Log ( c) oral e	en exa (5 to 10 examin	mination (30 to 60 minut pages) or ation of one candidate e	es) or ach (15 to 30 minutes	5)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h	60 h					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	ins in				
Bachel	or's de	gree (1 major) Biomedicir	ne (2020)			

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Module title				Abbreviation	
Selecte	Selected Courses from Biology and Medicine 3				03-98-FSQ-MB3-202-m01
Module	e coord	inator		Module offered by	
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
3	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Prior approval from	degree programme o	coordinator required.
Conten	ts				
Courses	s offere	ed by the Faculties of Bio	ogy or Medicine that	contribute to furthe	r professional qualification.
Intende	ed learr	ning outcomes			
The stu king sk their pr	dents a ills, ser ofessio	acquire a broader range c rves for personal orientat onal qualification.	of knowledge that ena ion and development	ables them to enhan t of interests in the a	ce their interdisciplinary thin- irea of life sciences and improves
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3)					
Methoo module is	<b>d of ass</b> creditab	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
a) Writt b) Log ( c) oral e	en exa (5 to 10 examin	mination (30 to 60 minut pages) or ation of one candidate e	es) or ach (15 to 30 minutes	;)	
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
90 h					
Teaching cycle					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	e appea	in			
Bachelo	or's deg	gree (1 major) Biomedicir	ie (2020)		

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Module	Module title Abbreviation					
Selected Courses from other Faculties with a Biomedical Focus 1				cus 1	03-98-FSQ-AF1-202-m01	
Module	coord	inator		Module offered by		
Dean of	f Studie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme o	coordinator required.	
Conten	ts					
Course: sional o	s, in pa qualific	rticular in the area of nat ation.	ural sciences, offered	d by other Faculties t	that contribute to further profes-	
Intende	ed learr	ning outcomes				
The stu skills, c	dents a opens ι	acquire a broader range o up the opportunity to dee	of knowledge that ena pen personal interes	ables them to enhan ts and supports thei	ce their interdisciplinary thinking r professional qualification.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2)						
Methoo module is	<b>d of ass</b> creditab	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	
a) Writt b) Log ( c) oral e	en exa (5 to 10 examin	mination (30 to 60 minut pages) or ation of one candidate e	es) or ach (15 to 30 minutes	))		
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
60 h	60 h					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	irs in				
Bachel	Bachelor's degree (1 major) Biomedicine (2020)					

Module	Module title Abbreviation					
Selected Courses from other Faculties with a Biomedical Focus				CUS 2	03-98-FSQ-AF2-202-m01	
Module	coord	inator		Module offered by		
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme o	coordinator required.	
Conten	ts					
Course: sional o	s, in pa qualific	rticular in the area of nat ation.	ural sciences, offered	d by other Faculties t	that contribute to further profes-	
Intende	ed learr	ning outcomes				
The stu skills, c	dents a opens ι	acquire a broader range o up the opportunity to dee	of knowledge that ena pen personal interes	ables them to enhan ts and supports thei	ce their interdisciplinary thinking r professional qualification.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (3)						
Methoo module is	<b>d of ass</b> creditab	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	
a) Writt b) Log ( c) oral e	en exa (5 to 10 examin	mination (30 to 60 minut pages) or ation of one candidate e	es) or ach (15 to 30 minutes	))		
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
90 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	irs in				
Bachel	Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation	
Superv	Supervising Tutorials 1				03-98-FSQ-TUT1-182-m01	
Module	Module coordinator			Module offered by		
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme c	coordinator required.	
Conten	Its					
Studer and the	nts work ey parti	as tutors. They support cipate as assistants in th	other students, in pa e organisation and c	rticular in the contex arrying out of exercis	tt of courses and study planning, ses and practical courses.	
Intend	ed lear	ning outcomes				
plain n motiva own kn assist v	nethods tion of nowledg with the	and execution of experi groups, and they practice ge and communication. Fi e organisation within the	ments to other stude ed applying conflict re rom their own experie study programme.	esolution strategies.	erience in the supervision and Promotion of self-confidence in students in various matters and	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
T (2)						
Metho module is	<b>d of ass</b> s creditab	<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	
Log (2	to 3 pag	ges)				
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
60 h	60 h					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)			
Bachelor's degree (1 major) Biomedicine (2020)						

Module title				Abbreviation	
Supervising Tutorials 2					03-98-FSQ-TUT2-182-m01
Modul	e coord	inator		Module offered by	
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	Prior approval from	degree programme o	coordinator required.
Conter	Its				
Studer and the	nts work ey parti	c as tutors. They support cipate as assistants in th	other students, in pa e organisation and c	rticular in the contex arrying out of exercis	tt of courses and study planning, ses and practical courses.
Intend	ed lear	ning outcomes			
lutors plain n motiva own kr assist	are able nethods tion of nowledg with the	e to communicate comple s and execution of experi groups, and they practice ge and communication. Fi e organisation within the	ex technical facts in a ments to other stude ed applying conflict re rom their own experie study programme.	a clear and structured nts. They gained exp esolution strategies. ence, they supervise	d way. They have the ability to ex- perience in the supervision and Promotion of self-confidence in students in various matters and
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
T (3)					
Metho module is	<b>d of ass</b> s creditab	<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
Log (2	to 3 pag	ges)			
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
90 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
Bachelor's degree (1 major) Biomedicine (2020)					

Module title				Abbreviation		
Supervising Tutorials 3					03-98-FSQ-TUT3-182-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
3	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme c	oordinator required.	
Conten	Its					
Studer and the	nts work ey parti	as tutors. They support cipate as assistants in th	other students, in pa e organisation and ca	rticular in the contex arrying out of exercis	t of courses and study planning, ses and practical courses.	
Intend	ed lear	ning outcomes				
plain n motiva own kn assist	nethods tion of nowledg with the	and execution of experi groups, and they practice ge and communication. Fi e organisation within the	ments to other stude ad applying conflict re rom their own experie study programme.	esolution strategies.	perience in the supervision and Promotion of self-confidence in students in various matters and	
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
T (3)						
Metho module is	<b>d of ass</b> s creditab	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	
Log (2	to 3 pag	ges)				
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
90 h						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)			
Bachelor's degree (1 major) Biomedicine (2020)						

Module title A					Abbreviation	
Journal	Journal Club 1				03-98-FSQ-LIT1-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (	Chair of Experimental Bio	medicine	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Studen sults in	ts pres the gre	ent selected primary pub oup.	lications written in E	nglish and discuss th	neir contents, methods and re-	
Intende	ed leari	ning outcomes				
Studen They po evaluat ability t cally re	ts learr ossess ce resul co place levant	n the structure of scientifi the ability to read scienti its and face them to critic e the contents of an articl aspects.	c articles and the ap fic articles critically, al discussion in the g le in the broader cont	propriate approache to extract relevant in group regarding their rext of a specific sub	s to answer a specific question. formation for a presentation, to interpretation. They develop the ject area, also in relation to clini-	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (1) Module	e taugh	t in: German/English				
Method	d of ass	<b>sessment</b> (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
module is	creditab	le for bonus)				
present Langua	tation ( ge of a	approx. 15 minutes) ssessment: German or Er	nglish			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelo	or's de	gree (1 major) Biomedicir	ie (2015)			
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)			
Bachelor's degree (1 major) Biomedicine (2020)						

Module title Abbreviation					Abbreviation	
Journal	Journal Club 2				03-98-FSQ-LIT2-152-m01	
Module	coord	inator		Module offered by		
holder	of the (	Chair of Experimental Bio	medicine	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
2 seme	ster	undergraduate				
Conten	ts					
Studen sults in	ts pres the gro	ent selected primary pub oup.	lications written in E	nglish and discuss th	neir contents, methods and re-	
Intende	ed leari	ning outcomes				
Studen They po evaluat ability t cally re	ts learr ossess e resul o place levant	n the structure of scientifi the ability to read scienti its and face them to critic e the contents of an articl aspects.	c articles and the ap fic articles critically, t al discussion in the g e in the broader cont	propriate approache to extract relevant in group regarding their rext of a specific sub	s to answer a specific question. formation for a presentation, to interpretation. They develop the ject area, also in relation to clini-	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (1) Module	e taugh	t in: German/English				
Method	l of ass	sessment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
module is	creditab	le for bonus)				
present Langua	tation ( ge of a	approx. 15 minutes) ssessment: German or Er	nglish			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Bachelo	or's de	gree (1 major) Biomedicir	ie (2015)			
Bachel	or's de	gree (1 major) Biomedicir	ie (2018)			
Bachelor's degree (1 major) Biomedicine (2020)						

Module title A				Abbreviation		
Excursion 1					03-98-FSQ-EXK1-152-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studie	es Biomedizin (Biomedic	ine)	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
1	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Prior approval from	degree programme c	oordinator required.	
Conten	ts					
Field tri studies	ip to se	lected institutions or con	npanies that are relev	ant to the life sciend	ces to deepen knowledge of the	
Intende	ed learı	ning outcomes				
Studen tacts ai them w special	ts mak nd netv vith one qualifi	e contact with industry a vorking. Knowing new sul ''s own interests. Studen cation option supports ir	nd other potential em bject-related occupat ts broaden their scier ndividual topics.	ployers and get the ional fields and thei ntific knowledge to d	opportunity for personal con- r perspectives and comparing leepen their qualifications. This	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
E (1)						
Method module is	<b>d of ass</b> creditab	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	
report (	(1 to 2 p	bages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
30 h						
Teachi	Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
Bachelor's degree (1 major) Biomedicine (2015)						
Bachel	or's deg	gree (1 major) Biomedicir	ne (2018)			
Bachel	or's deg	gree (1 major) Biomedicir	ie (2020)			

Module title Abbreviation				Abbreviation	
<b>Excursion 2</b> 03-98-FSQ-EXK2-152-m01					03-98-FSQ-EXK2-152-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
1	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Prior approval from	degree programme c	oordinator required.
Conten	ts				
Field tri studies	p to se	lected institutions or con	npanies that are relev	ant to the life sciend	ces to deepen knowledge of the
Intende	ed lear	ning outcomes			
Studen tacts ar them w special	ts mak nd netv ith one qualifi	e contact with industry an vorking. Knowing new sul ''s own interests. Student cation option supports in	nd other potential em bject-related occupat ts broaden their scier ndividual topics.	pployers and get the ional fields and thei ntific knowledge to d	opportunity for personal con- r perspectives and comparing leepen their qualifications. This
Course	<b>S</b> (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)	
E (1)					
Methoo module is	<b>d of ass</b> creditab	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
report (	(1 to 2 p	oages)			
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
30 h					
Teachir	ıg cycl	9			
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module	Module appears in				
Bachel	Bachelor's degree (1 major) Biomedicine (2015)				
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)		
Bachel	or's de	gree (1 major) Biomedicir	ie (2020)		

Module title					Abbreviation	
Orientational Laboratory course					03-98-FSQ-F2PR-152-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studie	es Biomedizin (Biomedic	ine)	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Studen	ts sper	nd 2 weeks at an internal	or external laborator	y and can actively pa	articipate in in a project.	
Intende	ed learı	ning outcomes				
The stu methoc on with	dents g ls to ar in a tea	gain first insights into dai Iswer a question and the am.	ly laboratory work, th y acquire new practic	ne structuring of wor al skills. They experi	k processes, the application of ience ranking and communicati-	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
P (2)						
Methoo module is	<b>d of ass</b> creditab	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	
Log (5 t	:0 10 pa	ages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Additio	nal info	ormation on module dura	tion: 2 weeks			
Worklo	ad					
60 h						
Teachir	Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelo Bachelo Bachelo	Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation
Laboratory Course in Biomedical Research 1					03-98-FSQ-F2PR1-152-m01
Module	e coord	inator		Module offered by	
Dean o	fStudi	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	May be combined ne F2PR3.	either with 03-98-FS	Q-F2PR2 nor with 03-98-FSQ-
Conten	ts				
Studen	its sper	nd 2 weeks working on a	small, well-defined s	cientific lab project a	at an internal or external lab.
Intende	ed lear	ning outcomes			
Studen knowle on of ra their ov	its reinf edge un aw data wn worl	Force previously acquired der supervision in the lal a. The students are able to k from it.	lab skills, acquire ne o. Students gain expe o link their work to th	ew lab techniques ar ertise in the analysis e relevant literature	nd learn how to apply theoretical and documentation presentati- and to derive first questions for
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (4)					
Metho module is	<b>d of ass</b> s creditab	<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
Log (5 t	to 10 pa	ages)			
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Additio	onal info	ormation on module dura	tion: 2 weeks, full tin	ne.	
Worklo	ad				
90 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel Bachel Bachel	Bachelor's degree (1 major) Biomedicine (2015) Bachelor's degree (1 major) Biomedicine (2018) Bachelor's degree (1 major) Biomedicine (2020)				

Module title					Abbreviation	
Laboratory Course in Biomedical Research 2					03-98-FSQ-F2PR2-152-m01	
Module	Module coordinator			Module offered by		
Dean o	f Studie	es Biomedizin (Biomedic	ine)	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
4	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	May be combined ne F2PR3.	either with 03-98-FS	Q-F2PR1 nor with 03-98-FSQ-	
Conten	Its					
Studer	its sper	nd 3 weeks working on a s	small, well-defined s	cientific lab project a	at an internal or external lab.	
Intend	ed learı	ning outcomes				
Studer knowle on of ra their ov	nts reinf edge un aw data wn worl	orce previously acquired der supervision in the lal The students are able to < from it.	lab skills, acquire ne o. Students gain expe o link their work to th	ew lab techniques ar ertise in the analysis e relevant literature	nd learn how to apply theoretical and documentation presentati- and to derive first questions for	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
P (6)						
Metho module is	<b>d of ass</b> s creditab	<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	
Log (10	to 15 p	ages) and talk (approx. 1	o minutes)			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Additic	onal info	ormation on module dura	tion: 3 weeks, full tin	ne.		
Worklo	ad					
120 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)			
Bachel Bachel	or's de or's de	gree (1 major) Biomedicir gree (1 major) Biomedicir	1e (2018) 1e (2020)			

Module title					Abbreviation
Laboratory Course in Biomedical Research 3 03-98-FSQ-F2					03-98-FSQ-F2PR3-152-m01
Module	Module coordinator			Module offered by	
Dean o	of Studie	es Biomedizin (Biomedic	ine)	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	May be combined no F2PR2.	either with 03-98-FS	Q-F2PR1 nor with 03-98-FSQ-
Conten	Its				
Studer	its sper	d 4 weeks working on a	small, well-defined s	cientific lab project a	at an internal or external lab.
Intend	ed learı	ning outcomes			
Studen knowle on of ra their ov	nts reinf edge un aw data wn worl	orce previously acquired der supervision in the lal . The students are able to < from it.	lab skills, acquire ne b. Students gain expe b link their work to th	ew lab techniques ar ertise in the analysis e relevant literature	nd learn how to apply theoretical and documentation presentati- and to derive first questions for
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (8)					
Metho module is	<b>d of ass</b> s creditab	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
Log (10	to 15 p	ages) and talk (approx. 1	o minutes)		
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Additic	onal info	ormation on module dura	tion: 4 weeks, full tin	ne.	
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)		
Bachel	or's deg	gree (1 major) Biomedicir	ne (2018)		
Bachelor's degree (1 major) Biomedicine (2020)					

Module title					Abbreviation	
Intercu	Intercultural Competence				03-98-FSQ-IKK-202-m01	
Module	Module coordinator			Module offered by		
Dean o	f Studi	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
The stu commu gement	dents o inicatio	expand their competence on problems, pathways to	s and foundations of successful collabora	f intercultural commu ation, international t	unication and culture-related eam building and conflict mana-	
Intende	ed lear	ning outcomes				
Studen sitivity	ts sens toward	sitize to intercultural issu s cultural differences and	es and are able to ref I potential points of f	flect on their own cul friction.	ture. They have developed a sen-	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (3)						
Methoo module is	<b>d of ass</b> creditab	<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	
a) preso b) term c) oral o	entatio paper examin	n (15 to 30 minutes) or (10 to 15 pages) or ation (approx. 30 minute	s)			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
90 h						
Teachi	Teaching cycle					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module	appea	in in				
Bachelor's degree (1 major) Biomedicine (2020)						

Module title					Abbreviation	
Personal Skills in Science					03-98-FSQ-NETW1-202-m01	
Module	coord	inator		Module offered by		
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
Identify fic pher technic tise the	ing and nomena al skill respec	d formulating questions t a and interpreting scienti s, to answer or solve scie ctive skills in small group	hat are scientifically fic evidence are key ntific problems. Base s and present their re	approachable, desc competences that ar ed on concrete exam esults.	ribing and explaining scienti- e required, in addition to purely ples, students interactively prac-	
Intende	ed learn	ning outcomes				
In addit dividua sis com aspects	tion to l perso petenc , and a	training their professiona nal and interactive skills ces. Students are also ab are sensitised to scientific	al and methodologica . With this they deep le to argue profession c misconduct.	Il skills, the students en methodological c nally, to express diffe	s develop and improve their in- ompetences and extend analy- erent opinions, e.g. on ethical	
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2)						
Method module is	l of ass creditab	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	
a) log (a b) talk ( c) oral e	approx (approx examin	. 5 pages) or ‹. 10 minutes) or ation in groups of up to 3	candidates (approx.	10 minutes per can	didate)	
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h	60 h					
Teaching cycle						
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)		
Module	appea	irs in				
Bachelor's degree (1 major) Biomedicine (2020)						

Module title					Abbreviation	
Personal Skills in Science					03-98-FSQ-NETW2-202-m01	
Module	coord	inator		Module offered by		
Dean of	fStudie	es Biomedizin (Biomedic	ine)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
Identify fic pher technic tise the	ing and nomena al skill respec	d formulating questions t a and interpreting scienti s, to answer or solve scie ctive skills in small group	hat are scientifically fic evidence are key on ntific problems. Base s and present their re	approachable, desc competences that ar ed on concrete exam esults.	ribing and explaining scienti- e required, in addition to purely ples, students interactively prac-	
Intende	ed learn	ning outcomes				
In addit dividua sis com aspects	tion to l perso petenc , and a	training their professiona nal and interactive skills ces. Students are also ab are sensitised to scientific	al and methodologica . With this they deep le to argue profession c misconduct.	Il skills, the students en methodological c nally, to express diffe	s develop and improve their in- ompetences and extend analy- erent opinions, e.g. on ethical	
Courses	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (3)						
Method module is	<b>l of ass</b> creditab	essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
a) log (a b) talk ( c) oral e	approx (approx examin	. 10 pages) or k. 10 minutes) or ation in groups of up to 3	candidates (approx.	10 minutes per can	didate)	
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	Workload					
90 h						
Teaching cycle						
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module	appea	irs in				
Bachelo	Bachelor's degree (1 major) Biomedicine (2020)					



# **Thesis** (15 ECTS credits)

Bachelor's with 1 major Biomedicine (2020)	JMU Würzburg • generated 29-Jun-2025 • exam. reg.	page 104 / 106
	data record Bachelor (180 ECTS) Biomedizin - 2020	

Module title					Abbreviation		
Bachel	or Thes	sis Biomedicine			03-98-TH-152-m01		
Module	e coord	inator		Module offered by			
chairpe dicine)	erson o	f examination committee	Biomedizin (Biome-	Faculty of Medicine			
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						
Conduc on in a	ct a def writter	ined and focused researd hthesis.	ch project under supe	rvision within a limi	ted time frame and its presentati-		
Intende	ed lear	ning outcomes					
Studen applyin courag thodolo to a crit	ts dem ng scier ed. In t ogy in a tical ev	onstrate their ability to s ntific research methods. I he written thesis they sho a reproducible manner, ev aluation, place them in t	olve a defined proble Jnder supervision, in ow that they are able valuate and present r he context of the know	m within a chosen a dependent work and to formulate a defin esults according to s wn literature and de	rea within a given time frame by d integration of own ideas are en- ed aim, explain the applied me- scientific standards, subject them rive further work from them.		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
No cou Module	rses as e taugh	signed to module t in: German/English					
Methoo module is	<b>d of ass</b> s creditab	<b>Sessment</b> (type, scope, langua ile for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
written Langua	thesis ge of a	(20 to 40 pages) ssessment: German or Ei	nglish				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Time to	compl	ete: 10 weeks.					
Worklo	ad						
360 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module	e appea	ars in					
Bachel	or's de	gree (1 major) Biomedicir	ne (2015)				
Bachel	or's de	gree (1 major) Biomedicir	ne (2018)				
Bachel	Bachelor's degree (1 major) Biomedicine (2020)						

Module title					Abbreviation	
Colloquium					03-98-TK-152-m01	
Module	e coord	inator		Module offered by		
chairpe dicine)	erson o	f examination committee	Biomedizin (Biome-	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
3	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Studen	ts pres	ent the results of their th	esis projects in a scie	entific colloquium.		
Intende	ed leari	ning outcomes				
Studen	ts are a	able to present and defer	nd the data from their	thesis project in fro	nt of a professional audience.	
Course	<b>S</b> (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
K (o) Module	e taugh	t in: German/English				
Methoo module is	<b>l of ass</b> creditab	<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	
oral exa Langua	aminati ge of a	ion of one candidate eacl ssessment: German or Ei	h (20 to 30 minutes) nglish			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
90 h						
Teachir	Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	Module appears in					
Bachel	Bachelor's degree (1 major) Biomedicine (2015)					
Bachel	or's deg	gree (1 major) Biomedicir	ne (2018)			
Bachelor's degree (1 major) Biomedicine (2020)						