

Module Catalogue for the Subject

Computer Science

as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Examination regulations version: 2018 Responsible: Faculty of Mathematics and Computer Science Responsible: Institute of Computer Science

JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record 88|079|-|-|H|2018



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The subject is divided into

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Learning Outcomes

German contents and learning outcome available but not translated yet.

Wissenschaftliche Befähigung

- Die Absolventinnen und Absolventen können erweiterte mathematische, technische, theoretische und praktische Konzepte der Informatik anwenden.
- Die Absolventinnen und Absolventen können tiefergehende Kenntnisse in mindestens einem Teilgebiet abrufen.
- Die Absolventinnen und Absolventen können fortgeschrittene hard- und/oder softwaregetriebene Experimente durchführen, analysieren, auswerten und die erhaltenen Ergebnisse darstellen.
- Die Absolventinnen und Absolventen sind in der Lage, sich mit Hilfe von Fachliteratur in neue Aufgabengebiete einzuarbeiten und die Ergebnisse zu interpretieren und zu bewerten.
- Die Absolventinnen und Absolventen besitzen Abstraktionsvermögen, analytisches Denken, Problemlösungskompetenz und die Fähigkeit, fortgeschrittene Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, fortgeschrittene Methoden der Informatik auf konkrete praktische oder theoretische Aufgabenstellungen anzuwenden, Lösungswege zu entwickeln und die Ergebnisse zu interpretieren und zu bewerten.
- Die Absolventinnen und Absolventen setzen die erlernten theoretischen und praktischen Methoden in geschlossener Form ein, um zu zeigen, dass sie zur Anwendung der Konzepte wissenschaftlichen Arbeitens befähigt sind.
- Die Absolventinnen und Absolventen können ihr Wissen und ihre Erkenntnisse einem Fachpublikum gegenüber darstellen und vertreten.

Befähigung zur Aufnahme einer Erwerbstätigkeit

- Die Absolventinnen und Absolventen können ihr Wissen und ihre Erkenntnisse einem Fachpublikum gegenüber darstellen und vertreten.
- Die Absolventinnen und Absolventen sind in der Lage, konstruktiv und zielorientiert in einem Team zusammenzuarbeiten und auftretende Konflikte zu lösen (Teamfähigkeit).
- Die Absolventinnen und Absolventen können ihre erworbenen Kompetenzen in unterschiedlichen interkulturellen Kontexten und in international zusammengesetzten Teams anwenden.
- Die Absolventinnen und Absolventen kennen wichtige Anforderungen und Arbeitsweisen im gewerblichen Umfeld sowie in Forschung und Entwicklung.
- Die Absolventinnen und Absolventen sind befähigt, Probleme zu analysieren und zu lösen und sich in weniger vertraute Themenkomplexe einzuarbeiten.

Persönlichkeitsentwicklung

- Eigenverantwortlichkeit, Selbstständigkeit, Zeitmanagement, Teamfähigkeit
- Die Absolventinnen und Absolventen kennen die Regeln guter wissenschaftlicher Praxis und beachten sie.
- Die Absolventinnen und Absolventen können ihr Wissen und ihre Erkenntnisse einem Fachpublikum gegenüber darstellen und vertreten.

Befähigung zum gesellschaftlichen Engagement

- Die Absolventinnen und Absolventen können Entwicklungen im Informationssektor kritisch reflektieren und deren Auswirkungen auf die Wirtschaft, Gesellschaft und die Umwelt in Ansätzen erfassen (Technikfolgenabschätzung).
- Die Absolventinnen und Absolventen haben ihr Wissen bezüglich wirtschaftlicher, gesellschaftlicher, kultureller etc. Fragestellungen erweitert und können in Ansätzen begründet Position beziehen.
- Die Absolventinnen und Absolventen entwickeln die Bereitschaft und Fähigkeit, ihre Kompetenzen in partizipative Prozesse einzubringen und aktiv an Entscheidungen mitzuwirken.

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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)):

14-Mar-2018 (2018-15)

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

(20 ECTS credits)

Module title					Abbreviation				
Semina	ır 1 - Cu	irrent Topics in Compute	r Science		10-I=SEM3-161-m01				
Module	coord	inator		Module offered by					
Dean of	fStudi	es Informatik (Computer	Science)	Institute of Comput	er Science				
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)					
5		rical grade		, ,,					
Duratio		Module level	Other prerequisites						
1 seme:		graduate							
		glauuale							
	ndent r	review of a current topic i nd oral presentation.	n computer science b	based on literature a	nd, where applicable, software				
Intende	ed lear	ning outcomes							
			review a current top	ic in computer scien	ce, to summarise the main				
		tten form and to orally pr							
		number of weekly contact hours, l		• •					
S (2)		· · · · · ·							
	l of ass	sessment (type scope langua	ge — if other than German	examination offered — if pr	ot every semester, information on whether				
		le for bonus)			a every semester, mornation on whether				
field of	compu	o to 15 pages) and presen iter science ssessment: German and,		ites) with subsequei	nt discussion on a topic from the				
Allocat			0.1						
Additio	nal inf	ormation							
Focuse	s availa		laster's programme li	nformatik (Computer	r Science, 120 ECTS credits): AT,				
Worklo									
150 h									
Teachir	ng cựcl	<u>م</u>							
reaciiii	is cycl								
 Dofo	al # a. ! :			`					
Reierre	מ נט וח	LPO I (examination regulations	s for teaching-degree progra	mmes)					
Module									
	-	ee (1 major) Computer Sc							
Master's degree (1 major) Mathematics (2016)									
Master's degree (1 major) Computational Mathematics (2016)									
Master's degree (1 major) Digital Humanities (2016)									
Master's degree (1 major) Computer Science (2017)									
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019)									
	-			9)					
	-	-	Master's degree (1 major) Mathematics (2019)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)									
		ning degree Gymnasium I Ty course MINT Teacher Eo	MINT Teacher Educati						

Module title			Abbreviation			
Seminar 2 - Current Topics in Computer Science 10-I=SEM4-161-mo					10-I=SEM4-161-m01	
Module coordinator				Module offered by		
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		review of a current topic in nd oral presentation.	n computer science b	ased on literature a	nd, where applicable, software	
Intende	ed learr	ning outcomes				
		are able to independently tten form and to orally pro			ce, to summarise the main	
Courses	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)		
S (2)						
module is term pa	creditab per (10	le for bonus)			t every semester, information on whether It discussion on the topic of the	
semina Langua		ssessment: German and/	or English			
Allocat	ion of p	olaces				
Additio	nal info	ormation				
		able for students of the M _R, HCI, GE	aster's programme li	nformatik (Computer	Science, 120 ECTS credits): AT,	
Worklo	ad					
150 h						
Teachir	ng cycl	е				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master'	s degre	ee (1 major) Computer Sc	ience (2016)			
	-	ee (1 major) Computer Sc				
	Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title Abbreviation					Abbreviation	
Practical course - Current Topics in Computer Science				10-I=PRAK-161-mo1		
Modul	e coord	inator		Module offered by	<u> </u>	
Dean o	of Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10		successfully completed		-		
Duratio		Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
Comple	etion of	f a practical task.				
		ning outcomes				
		allows participants to wo	rk on a problem in co	mputer science in te	eams.	
		number of weekly contact hours, I	· · ·	•		
P (6)		,		,		
module i	s creditab	ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		to 15 pages) ssessment: German and	/or English			
Allocat	tion of _l	places				
 Additio	onal inf	ormation				
		able for students of the M LR, HCI, GE	Aaster's programme I	nformatik (Compute	r Science, 120 ECTS credits): AT,	
Worklo	oad					
300 h						
Teachi	ng cycl	e				
			_			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		
Modul	e appea	ars in				
Master	r's degr	ee (1 major) Computer Sc	ience (2016)			
	-	ee (1 major) Computer Sc				
	-	ee (1 major) Computer Sc				
					ork Bavaria (ENB) (2020)	
Supple	Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020



Compulsory Electives

(70 ECTS credits)



General Compulsory Electives

(50 ECTS credits)

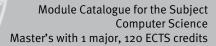
Module title			Abbreviation		
3D Point Cloud Processing			10-l=3D-161-m01		
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Scienc	e XVII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Contents					
Laser scanning, Kinect and camera models, basic data structures (lists, arrays, oc-trees), calculating normals, k- d trees, registration, features, segmentation, tracking, applications for airborne mapping, applications to mobile mapping.					
Intende	ed learr	ning outcomes			
munica data pr	te with ocessir	engineers / surveyors /	CV people / etc. Stud that real application	ents are able to solv scenarios are challe	I processing and are able to com- re problems of modern sensor enging in terms of computational issues.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + I Module		t in: English			
			ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			
written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English creditable for bonus					
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Focuse: IS,LR,H		able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits):
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module	e appea	irs in			
	-	ee (1 major) Computer Sc			
	-	ee (1 major) Computer Sc			
master	Master's degree (1 major) Computer Science (2018)				

Module title				Abbreviation	
Operati	ing Sys	tems			10-l=BS-161-m01
Module	coord	inator		Module offered by	
holder	of the C	hair of Computer Scienc	e II	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
schedu nageme	lers, pr ent, seg	ocess synchronisation, s	emaphores, monitor ystems, interfaces, d	s, critical regions, de	eads, cooperating processes, eadlocks, dynamic memory ma- etwork file systems, hard drive
Intende	ed learr	ning outcomes			
The stu	dents p	oossess knowledge and p	practical skills in buil	ding and using esse	ntial parts of operating systems.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (2)				
		e essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
lf annoi examin prox. 15 Separat	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English				
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Focuses SE,ES,G		able for students of the M	laster's programme Ir	nformatik (Computer	r Science, 120 ECTS credits):
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	rs in			
		ee (1 major) Computer Sc			
		ee (1 major) Computer Sc			
master	Master's degree (1 major) Computer Science (2018)				

Module title			Abbreviation		
Data Mining			10-I=DM-161-m01		
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts	-			
Foundations in the following areas: definition of data mining and knowledge discovery in databases, process model, relationship to data warehouse and OLAP data preprocessing, data visualisation, unsupervised learning methods (cluster- and association methods), supervised learning (e. g. Bayes classification, KNN, decision trees, SVM), learning methods for special data types, further learning paradigms.					
		ning outcomes			
ta mini the kno	ng and wledge	machine learning. They a	are able to solve prac and by using the KDD	tical knowledge disc	and algorithms in the area of da- covery problems with the help of acquired experience in the use
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (2)				
		e ssment (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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English					
credita Allocat					
	F				
Additio	nal inf	ormation			
Focuse: IS, HCI,		able for students of the M	laster's programme Ir	nformatik (Computer	Science, 120 ECTS credits): IT,
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
		ee (1 major) Computer Sc	ience (2016)		
	-	ee (1 major) Digital Huma			
Master	's degre	ee (1 major) Computer Sc	ience (2017)		
Master	's degre	ee (1 major) Computer Sc	ience (2018)		

Module title					Abbreviation		
Databases 1				10-l=DB-161-m01			
Module	e coord	inator		Module offered by	Aodule offered by		
Dean o	f Studi	es Informatik (Compute	er Science)	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio		Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
Relational algebra and complex SQL statements; database planning and normal forms, XML data modelling; transaction management.							
Intende	ed lear	ning outcomes					
		possess knowledge ab g in XML.	out data modelling and	l queries in SQL, tran	sactions as well as a	about easy	
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	rman)			
V (2) +	Ü (2)						
		Sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether	
prox. 1 <u>9</u> Separa	5 minut te writt ige of a	of one candidate each (tes per candidate). ten examination for Ma ssessment: German ar bonus	ster's students.	an oral examination	in groups of 2 cand	idates (ap-	
Allocat	ion of _l	olaces					
Additio	onal inf	ormation					
Focuse IS, HCI,		able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECTS o	credits): SE,	
Worklo	ad						
150 h							
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ummes)			
Module appears in							
Master's degree (1 major) Computer Science (2016)							
Master's degree (1 major) Physics (2016)							
Master's degree (1 major) Digital Humanities (2016)							
Master's degree (1 major) Computer Science (2017)							
Master's degree (1 major) Computer Science (2018)							
Master's degree (1 major) Physics (2020) Master's degree (1 major) Physics International (2020)							
	-	ee (1 major) Quantum E					
		ee (1 major) Quantum E					
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Master's degree (1 major) Physics International (2024)

Module title			Abbreviation		
Databases 2				10-l=DB2-161-m01	
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5		rical grade		•	
Duratio		Module level	Other prerequisites		
1 seme		graduate			
	Contents				
Data warehouses and data mining; web databases; introduction to Datalog.					
		ning outcomes	,		
		nave advanced knowledg	e about relational da	tabases XMI and da	ata mining
		umber of weekly contact hours, l			
		uniber of weekly contact hours, t	anguage — If other than der		
V (2) +		••			
		;essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		nation (approx. 60 to 120	minutes)		
				the written examina	tion may be replaced by an oral
examin	ation o	f one candidate each (ap			in groups of 2 candidates (ap-
		es per candidate).	<i>,</i>		
Langua credital		ssessment: German and,	or English		
Allocat					
Allocal		Jaces			
	nalinf	ormation			
			laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): SE,
IS, HCI.				·····	,,,,,,,,,,,,,,,
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	ins in			
Master'	s degr	ee (1 major) Computer Sc	ience (2016)		
Master'	s degr	ee (1 major) Business Info	ormation Systems (20	016)	
Master'	s degr	ee (1 major) Computer Sc	ience (2017)		
	-	ee (1 major) Computer Sc			
Master'	Master's degree (1 major) Information Systems (2019)				
Master'	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)				
Supple	mentar	y course MINT Teacher E	ducation PLUS, Elite N	letwork Bavaria (ENI	B) (2020)
Master'	s degr	ee (1 major) Aerospace Co	omputer Science (202	20)	
Master'	s degr	ee (1 major) eXtended Art	ificial Intelligence (xt	AI) (2020)	

Module	title				Abbreviation		
Interac	tive Co	mputer Graphics			10-l=lCG-161-m01		
Module	coord	inator		Module offered by			
holder	of the (Chair of Computer Scien	ce IX	Institute of Comput	er Science		
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	graduate					
Conten	ts						
cifically contem about li jection line wil	Computer graphics studies methods for digitally synthesising and manipulating visual content. This course spe- cifically concentrates on interactive graphics with an additional focus on 3D graphics as a requirement for many contemporary as well as for novel human-computer interfaces and computer games. The course will cover topics about light and images, lighting models, data representations, mathematical formulations of movements, pro- jection as well as texturing methods. Theoretical aspects of the steps involved in ray-tracing and the raster pipe- line will be complemented by algorithmical approaches for interactive image syntheses using computer systems. Accompanying software solutions will utilise modern graphics packages and languages like OpenGL, GLSL and/						
		ning outcomes					
comput	ter grap	he course, the students bhics. They will be able s applications and to ch	to implement a promin	ent variety of these			
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	man)			
V (2) +	Ü (2)						
		s essment (type, scope, langu le for bonus)	age — if other than German, e	examination offered — if no	t every semester, informati	on on whether	
lf annor examin prox. 15 Separat	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English						
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Focuses	s availa	able for students of the		nformatik (Computer	Science, 120 ECTS o	credits): HCI.	
Worklo	ad						
150 h							
Teachir	ng cycl	e					
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)			
Module	appea	irs in					
Master' Master' Master'	s degro s degro s degro	ee (1 major) Computer S ee (1 major) Computer S ee (1 major) Computer S ee (1 major) eXtended A	cience (2017) cience (2018) rtificial Intelligence (xt				
Master's wi	tn 1 majoi	r Computer Science (2018)		rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 19 / 162	

Master's degree (1 major) Computer Science (2021) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2023) Bachelor's degree (1 major) Mathematics (2023)

JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record Master (120 ECTS) Informatik - 2018

Module title			Abbreviation
Computational Complexity			10-I=KT-161-m01
Module coordinator		Module offered by	
Dean of Studies Informatik (Computer	Science)	Institute of Comput	er Science
ECTS Method of grading	Only after succ. com	pl. of module(s)	
5 numerical grade			
Duration Module level	Other prerequisites		
1 semester graduate			
Contents			
Complexity measurements and classes sumption versus computation time, de thods, P-NP problem, completeness pr	terminism versus ind	eterminism, hierarch	nical theorems, translation me-
Intended learning outcomes			
The students possess a fundamental a classes, general relationships betweer determinism versus indeterminism, he problems, Turing reduction, interactive	space and time clas erarchical theorems, t	ses, memory consum	nption versus computation time,
Courses (type, number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + Ü (2)			
Method of assessment (type, scope, langua module is creditable for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written examination (approx. 60 to 120 If announced by the lecturer at the beg examination of one candidate each (ap prox. 15 minutes per candidate). Separate written examination for Maste Language of assessment: German and creditable for bonus	inning of the course, oprox. 20 minutes) or er's students.		
Allocation of places			
Additional information			
Focuses available for students of the N IT, IS, ES, GE.	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): AT,
Workload			
150 h			
Teaching cycle			
Referred to in LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module appears in			
Master's degree (1 major) Computer Sc Master's degree (1 major) Computer Sc Master's degree (1 major) Computer Sc	ience (2017)		

Module title				Abbreviation
Cryptography	and Data Security			10-I=KD-161-m01
Module coord	inator		Module offered by	
Dean of Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS Meth	od of grading	Only after succ. com	pl. of module(s)	
5 nume	rical grade			
Duration	Module level	Other prerequisites		
1 semester	graduate			
Contents				
RSA, Diffie-He		ser-Micali, digital sig	nature, challenge-re	oublic key cryptography systems, sponse methods, secret sharing,
Intended lear	ning outcomes			
stems, Vernaı wasser-Micali	n one-time pad, AES, per	fect security, public k nge-response metho	ey cryptography, RS	orivate key cryptography sy- A, Diffie-Hellman, Elgamal, Gold- llionaire problem, secure circuit
Courses (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + Ü (2)				
Method of as module is creditat		ge — if other than German, e	examination offered — if no	t every semester, information on whether
If announced examination of prox. 15 minu Separate write	of one candidate each (ap tes per candidate). ten examination for Maste ssessment: German and,	inning of the course, pprox. 20 minutes) or er's students.		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocation of	places			
Additional inf	ormation			
Focuses avail SE, IT, IS, GE.	able for students of the N	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): AT,
Workload				
150 h				
Teaching cycl	e			
Referred to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module appea	ars in			
Master's degr	ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc	ience (2017)		

Module	title				Abbreviation	
Advanc	ed Pro	gramming			10-I=APR-161-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scien	ice II	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
grams. and cod	If more de dup nsible	vledge of basic program e complex problems are licates occur. In this lec structure. Also, further t	to be tackled, subopti ture, further knowledg	mal results like long e is to be conveyed o	, incomprehensible on how to give progr	functions ams and co-
Intende	ed lear	ning outcomes				
then im allel pro sing.	ipleme ocessir	n advanced programmir nted in multiple langua ng concepts are introdu	ges and their efficienc ced culminating in the	y measured using sta use of GPU architect	andard metrics. In ad	ddition, par-
		umber of weekly contact hours	, language — if other than Ger	man)		
V (2) +		•••				
		sessment (type, scope, langu le for bonus)	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether
examin prox. 15	ation c 5 minut ge of a	by the lecturer at the be of one candidate each (a ces per candidate). ssessment: German an bonus	approx. 20 minutes) or			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse: SE,IS,LI		able for students of the ES,GE	Master's programme l	nformatik (Computer	Science, 120 ECTS o	redits):
Worklo	ad					
150 h						
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	ars in				
Master' Master' Master' Master' Master'	's degr s degr s degr s degr s degr	ee (1 major) Computer S ee (1 major) Mathematic ee (1 major) Computatic ee (1 major) Computer S ee (1 major) Computer S ee (1 major) Computatic r Computer Science (2018)	cs (2016) onal Mathematics (201 Science (2017) Science (2018) onal Mathematics (201 JMU Würzbu	9) Irg • generated 19-Apr-2025 •		page 23 / 162
			reg. data reco	rd Master (120 ECTS) Informat	tik - 2018	

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)

Module	e title				Abbreviation	
Securit	ty of So	ftware Systems			10-l=SSS-172-m01	
Module	e coord	inator		Module offered by		
holder	ofthe	Chair of Computer Scien	nce II	Institute of Comput	er Science	
ECTS	Methe	od of grading	Only after succ. compl. of module(s)			
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Its					
dern co the foll • x • R • V • E						
Intend	ed lear	ning outcomes				
cepts s	such as	a deep understanding blockchains. The lectu lents to gain hands-on	re prepares for researc	h in the area of secu	rity and privacy, whi	le the exerci-
Course	S (type, r	number of weekly contact hour	s, language — if other than Gei	rman)		
V (2) +						
	_	t in: English				
		Sessment (type, scope, lang ble for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether
written If anno examir prox. 19 Langua	exami ounced nation o 5 minut	nation (approx. 60 to 12 by the lecturer at the bo of one candidate each (tes per candidate). ssessment: English	eginning of the course,			
Allocat	ion of _l	places				
Additio	onal inf	ormation				
IS, LR,	HCI, ES	able for students of the 1 ming knowledge in C i		nformatik (Computer	Science, 120 ECTS of	credits): SE,
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	immes)		
Module	e appea	ars in				
Master's w	ith 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 25 / 162

Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) eXtended Artificial Intelligence (xtAl) (2020)

Module	title				Abbreviation
Comput	ter Arcl	hitecture			10-I=RAK-161-m01
Module	coord	inator		Module offered by	
Dean of	Studie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
		architectures, command ector processors, multi-c		pipelining, statical a	and dynamic instruction schedu-
Intende	d learr	ning outcomes			
		naster the most importar operating systems.	nt techniques to desig	gn fast computers as	s well as their interaction with
Courses	5 (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + ĺ	Ü (2)				
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
examin prox. 15 Separat	ation o ; minut te writt ge of a	f one candidate each (ap es per candidate). en examination for Maste ssessment: German and/	prox. 20 minutes) or er's students.		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Focuses IT, ES, L		able for students of the M	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): SE,
Worklo	ad				
150 h					
Teachin	ig cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	rs in			
Master' Master'	s degre s degre	ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc	ience (2017) ience (2018)		

Module	e title				Abbreviation		
Compu	ter Net	works and Communicat	ion Systems		10-I=RK-161-m01		
Module	e coord	inator		Module offered by			
holder	of the (Chair of Computer Scier	ice III	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)			
8	nume	rical grade					
Duratio	on	Module level	Other prerequisites	i			
1 seme	ster	graduate					
Conten	ts		-				
of com and str chies, o and ISO	Properties of computer and communication systems: data traffic in distributed systems. Performance analysis of computer networks and communication systems: problem statement and introduction to method architecture and structure of computer networks: network structure, network access, access methods, digital transfer hierarchies, dataflow control and traffic control, transfer network. Communication protocols: fundamental principles and ISO architecture models. Internet: structure and basic mechanism, TCP/IP, routing, network management. Mobile communication networks: fundamental concepts, GSM, UMTS. Future communication systems and net-						
	ed lear	ning outcomes					
The stu	dents	possess an intricate kno damental principles to		re of computer netwo	orks and communica	ition systems	
Course	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)			
V (4) +	Ü (2)						
module is	s creditab	sessment (type, scope, langule for bonus)		examination offered — if no	t every semester, informati	ion on whether	
examin prox. 1 <u>9</u> Separa Langua	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English creditable for bonus						
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Focuse ES, LR.	s availa	able for students of the	Master's programme I	nformatik (Computer	r Science, 120 ECTS o	credits): IT,	
Worklo	ad						
240 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	ammes)			
Module	e appea	ars in					
	-	ee (1 major) Computer S					
	-	ee (1 major) Computer S					
	-	ee (1 major) Computer S hing degree Gymnasium		ion PILIS Elita Notw	ork Bayaria (END) (a.	020)	
		ry course MINT Teacher				020)	
		r Computer Science (2018)		urg • generated 19-Apr-2025 •		page 28 / 162	
			reg. data reco	rd Master (120 ECTS) Informa	tik - 2018		



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module	title				Abbreviation	
Knowled	dge-ba	sed Systems			10-I=WBS-161-m01	
Module	coordi	nator		Module offered by		
holder o	of the C	hair of Computer Science	e VI	Institute of Compute	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	numer	rical grade				
Duration	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	S					
		n the following areas: kno dge acquisition, learning			e representation, solving me-	
Intende	d learr	ning outcomes				
		oossess theoretical and p ding knowledge formalisa			g and design of knowledge-based mall project.	
Courses	i (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)		
V (2) + Ü	j (2)					
module is written e If annou examina prox. 15 Separat Languag creditab Allocatie Additior	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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Separate written examination for Master's students. Language of assessment: German and/or English creditable for bonus Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,					
Workloa	ad					
150 h						
Teachin	g cycle	9				
Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in						
Master's Master's	s degre s degre	r s in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc	ience (2017)			

	title				Abbreviation				
Project	- Curre	nt Topics in Computer S	cience		10-I=PRJAK-162-m01				
Module	e coordi	nator		Module offered by					
Dean of	f Studie	es Informatik (Computer	Science)	Institute of Comput	er Science				
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)					
5	numer	rical grade							
Duratio	n	Module level	Other prerequisites						
1 semes	ster	graduate							
Content	ts								
Comple	etion of	a project task (in Teams)).						
Intende	ed learn	ning outcomes							
		ows participants to work	on a problem in com	puter science in tear	ns.				
		umber of weekly contact hours, l							
P (4)	- (7)-7								
Method		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether				
Each pr same to Langua	oject is opic. As ge of as		he project will not be , only be offered for t /or English	repeated; there will he project offered in	not be another project with the the respective semester.				
Allocati	ion of p	laces							
Additio	nal info	ormation							
			laster's programme Ir	nformatik (Computer	Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,				
Workloa	ad		SE, IT, IS, ES, LR, HCI, GE.						
150 h									
150 h									
Teachin	ng cycle	9							
	ng cycle	9							
Teachin			s for teaching-degree progra	mmes)					
Teachin		E	s for teaching-degree progra	mmes)					
Teachin Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)					
Teachin Referrer Module	d to in e appea	LPO I (examination regulation)		mmes)					
Teachin Referred Module Master'	d to in appea s degree	LPO I (examination regulation rs in ee (1 major) Computer Sc	ience (2016)	mmes)					
Teachin Referred Module Master' Master'	d to in appea s degre	LPO I (examination regulation)	ience (2016) ience (2017)	mmes)					
Teachin Referree Module Master' Master' Master'	d to in e appea 's degre 's degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc	ience (2016) ience (2017) ience (2018)	mmes)					
Teachin Referred Module Master' Master' Master' Master'	d to in appea s degre s degre s degre s degre s degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc	ience (2016) ience (2017) ience (2018) t (2018)						
Teachin Referred Master' Master' Master' Master' Master'	d to in appea s degre s degre s degre s degre s degre s degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Managemen	ience (2016) ience (2017) ience (2018) t (2018) al Mathematics (2019						
Teachin Referred Master' Master' Master' Master' Master' Master' Master'	d to in e appea s degre s degre s degre s degre s degre s degre s degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Managemen ee (1 major) Computation	ience (2016) ience (2017) ience (2018) t (2018) aal Mathematics (2019 5 (2019)						
Teachin Referree Module Master' Master' Master' Master' Master' Master' Master' Master'	d to in e appea s degre s degre s degre s degre s degre s degre s degre s degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Managemen ee (1 major) Computation ee (1 major) Mathematics	ience (2016) ience (2017) ience (2018) t (2018) al Mathematics (2019) s (2019) nunication (2019)						
Teachin Referren Master' Master' Master' Master' Master' Master' Master' Master' Master' Master' Master'	d to in appea s degre s degre	LPO I (examination regulation rs in ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Computer Sc ee (1 major) Management ee (1 major) Computation ee (1 major) Mathematics ee (1 major) Media Comm	ience (2016) ience (2017) ience (2018) t (2018) al Mathematics (2019 s (2019) nunication (2019) Systems (2019) MINT Teacher Educati	9) on PLUS, Elite Netwo					

Advanced Automation 10-I=AA-152-m01 Module coordinator Module offered by Inder of the Chair of Computer Science VII Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) B numerficial grade Duration Module level Other prerequisites 1 semester graduate Contents Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Interded learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Courses type, number of weekly contact hours, language - If other than German Wathod of assessment (yop, scope, language - If other than German, examination affered - If not every sensetser, information on whether module is contable for bonus Allocation of places Advanced to in LPO 1 (examination regulations for teaching degree gromames)	Module	e title				Abbreviation	
holder of the Chair of Computer Science VII Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 8 num=rical grade Duration Module level Other prerequisites 1 semester graduate Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Method of grade automation systems. Courses (type, number of weekly contact hours, language – if other than Geman) V (a) + 0 (a) Method of assessment (type, scope, language – if other than Geman, examination offered – if not every sensater, information on whether module is creditable for bonus Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT, IS, ES, LR, GE Workload 240 h Teaching cycle <td< td=""><td colspan="4"></td><td></td></td<>							
ECTS Method of grading Only after succ. compl. of module(s) 8 numerical grade Duration Module level Other prerequisites 1 semester graduate Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes	Module	e coord	inator		Module offered by		
8 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Courses (spe, number of weekly contact hours, language if other than German) V (a) + 0 (2) Method of assessment (type, scope, language if other than German) V (a) + 0 (2) Method of assessment (type, scope, language if other than German) V (a) + 0 (2) Method of assessment (type, scope, language if other than German) V (a) + 0 (2) Method for bonus	holder	of the (Chair of Computer Scien	ce VII	Institute of Comput	er Science	
Duration Module level Other prerequisites 1 semester graduate Contents Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Courses (type, number of weekly contact hours, language – if other than Geman) V (4) +0 (2) Method of assessment (type, scope, language – if other than Geman) V (4) +0 (2) Method of assessment (type, scope, language – if other than Geman, examination offered – if not every semester, information on whether involves indicials (reditable for borus Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT, IS, ES, ILR, GE Workload 240 h Teaching cycle Refered to in LPO1 (scamination regulations for te	ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
1 semester graduate Contents Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Courses (type, number of weekly contact hours, language if other than German) V (a) + U (a) V (a) + U (a) Method of assessment (type, scape, language if other than German, examination offered if not every semester, information on whether module is creditable for bonus) Autional information (approx. 6 to 120 minutes) Creditable for bonus Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT, IS, ES, LR, GE Workload Add in a LPO I (examination regulations for teaching degree programmes) § 2 21 IN - 3 b) Module appears in Master's degree (1 major) Space Science and Technology (2015) First state examination for the teaching degree Gymasium Computer Science (2015) -	8	nume	rical grade				
Contents Advanced topics in automation systems as well as instrumentation and control engineering, for example from the field of sensor data processing, actuators, cooperating systems, mission and trajectory planning. Intended learning outcomes The students have an advanced knowledge of selected topics in automation systems. They are able to implement advanced automation systems. Courses (type, number of weekly contact hours, language – if other than German) V (a) + 0 (2) 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 to 120 minutes) creditable for bonus Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IT.J.S.ES.LR.GE Vorkload 240 h Teaching cycle Teaching cycle Module appears in Master's degree (1 major) Space Science and Technology (2015) First state examination for the teaching degree grognamics (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science	Duratio	on	Module level	Other prerequisites			
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reg. data record Master (120 ECTS) Informatik - 2018			-	JMU Würzbı	urg • generated 19-Apr-2025 •	exam.	page 32 / 162

Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Algorithms for Geographic Information Systems 10-I=AGIS-161-m01 Module coordinator Module offered by	
Module coordinator Module offered by	
holder of the Chair of Computer Science I Institute of Computer Science	
ECTS Method of grading Only after succ. compl. of module(s)	
5 numerical grade	
Duration Module level Other prerequisites	
1 semester graduate	
Contents	
Algorithmic foundations of geographic information systems and their application in selected problems of accessing, analysis and presentation of spatial information. Processes of discrete and continuous or misation. Applications such as the creation of digital height models, working with GPS trajectories, tasks of stial planning as well as cartographic generalisation.	oti-
Intended learning outcomes	
The students are able to formalise algorithmic problems in the field of geographic information systems as we to select and improve suitable approaches to solving these problems.	ll as
Courses (type, number of weekly contact hours, language — if other than German)	
V (2) + Ü (2)	
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)	ıer
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an o examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (a prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus	
Allocation of places	
Additional information	
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): AT,IS,HCI	
Workload	
150 h	
Teaching cycle	
Referred to in LPO I (examination regulations for teaching-degree programmes)	
Module appears in	
Master's degree (1 major) Computer Science (2016)	
Master's degree (1 major) Mathematics (2016)	
Master's degree (1 major) Computational Mathematics (2016)	
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)	
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)	
Master's degree (1 major) Computer Science (2017)	
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019)	
Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)	
Master's with 1 major Computer Science (2018) JMU Würzburg • generated 19-Apr-2025 • exam. page 34 /	162

Master's degree (1 major) Information Systems (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)

Module	e title				Abbreviation	
Compu	tationa	ll Geometry			10-I=AG-161-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	nce l	e I Institute of Computer Science		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		1			
formati algorith	on syst nmic as	of computer science tems it is necessary t pects of these tasks: W data structures. Every t	o store, analyse, create /e will acquire techniqu	or manipulate spati les that are needed t	al data. This class is to plan and analyse	about the geometric al-
Intende	ed lear	ning outcomes				
metric	probler	are able to decide whic n. The students are abl concepts and techniqu	e to analyse new probl	ems and to come up		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ger	man)		
V (2) +	Ü (2)					
		sessment (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if no	t every semester, informati	on on whether
lf anno examin prox. 15	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English					
Allocat	ion of r	places				
Additio	nal inf	ormation				
	s availa	able for students of the	Master's programme li	nformatik (Computer	Science, 120 ECTS o	redits):
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	urs in				
Master Master Master Supple Master Master	Module appears in Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)					
Master's wi	th 1 majo	r Computer Science (2018)		rg • generated 19-Apr-2025 • d Master (120 ECTS) Informa		page 36 / 162

Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Aerospace Computer Science (2023)

Module title Abbreviation							
Approx	Approximation Algorithms 10-I=APA-161-m01						
Module	e coord	inator		Module offered by	Nodule offered by		
holder	of the (Chair of Computer Scier	nce l	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
there an are use drafting practica greedy,	re man d whic g and a al optir local s	ding the optimal soluti y problems without an h do not always give th nalysing techniques fon nisation problems, the search, scaling as well a	efficient algorithm for a e optimal solution but r algorithms which hav lecture will introduce s	an optimal solution. always give good so e a proven approxim tudents to importan	As a result, in praction lutions. This lecture ation quality. With t	ce, methods will discuss he help of	
Intende	ed lear	ning outcomes					
dament	tal draf	are able to analyse easy ting techniques such a l are able to apply thes	s greedy, local search a				
Course	S (type, r	number of weekly contact hours	, language — if other than Ger	rman)			
V (2) +	Ü (2)						
		sessment (type, scope, lang le for bonus)	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether	
lf annoi examin prox. 15 Langua	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus						
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Focuse: AT,IT,G		able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits):	
Worklo	ad						
150 h							
Teachir	ıg cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
§ 22 II Nr. 3 b)							
Module appears in							
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017)							
Master's wi	th 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 38 / 162	

Master's degree (1 major) Computer Science (2018) Module studies (Master) Computer Science (2019) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Mathematical Data Science (2025)

UNIVERSITÄT

WÜRZBURG

Module title Abbreviation						
Automa	Automata Theory 10-I=AUT-161-m01					
Module coordinator			Module offered by			
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		•			
words,	langua	ta, regular languages, sta ge acceptance through r anguages and star-free l	nonoids, syntactic mo	onoid, predicate logi		
Intende	ed lear	ning outcomes				
ges, sta	ar-free ds, synt	possess a fundamental a languages, natural equiv tactic monoid, predicate mata.	alence relations, pred	dicate logic with wor	ds, language accept	ance through
Course	S (type, r	number of weekly contact hours,	language — if other than Gei	man)		
V (2) +	Ü (2)					
module is	creditab	sessment (type, scope, langua le for bonus) nation (approx. 60 to 120		examination offered — if no	t every semester, informati	ion on whether
lf anno examin prox. 1	unced ation o 5 minut ge of a	by the lecturer at the beg of one candidate each (ap tes per candidate). ssessment: German and	ginning of the course, oprox. 20 minutes) or			
Allocat	ion of	olaces	-			
Additio	nal inf	ormation	-			
Focuse IT, ES, I		able for students of the N	Aaster's programme I	nformatik (Computer	Science, 120 ECTS (credits): AT,
Worklo	ad					
150 h			_			
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Computer Science (2016)						
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)						
	-			c)		
	-	ee (1 major) Computation		9) Irg • generated 19-Apr-2025 •	exam	page 40 / 162
	1 majo			rd Master (120 ECTS) Informa		Page 40 / 102



Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title A				Abbreviation		
Avionio	Avionics Systems 10-I=AVS-161-m01					
Module coordinator Module offered by				<u> </u>		
holder	ofthe	Chair of Computer Scie	nce VIII	Institute of Comput	er Science	
ECTS	1	od of grading	Only after succ. con	· · ·		
5		rical grade		• • • •		
Duratio		Module level	Other prerequisites	i		
1 seme		graduate				
Conten		3.44440				
commu	unicatio	<i>ionik-Systeme</i> (Avionic on of airplanes and sate asors and actuators, 5.	ellites: 1. software mod	ule and the software		
Intend	ed lear	ning outcomes				
		he course, the student . They should be able t		<i>.</i>		
Course	S (type, 1	number of weekly contact hour	s, language — if other than Ge	rman)		
V (2) +	Ü (2)					
		Sessment (type, scope, lang ole for bonus)	guage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
credita	ble for					
		ormation				
ES,LR	s avait	able for students of the	Master's programme i	nformatik (Compute	r Science, 120 ECIS (credits):
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)		
Module appears in						
Master's degree (1 major) Computer Science (2016)						
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Computer Science (2017)						
Master's degree (1 major) Computer Science (2018)						
	Master's degree (1 major) Computational Mathematics (2019)					
Master	's degr	ee (1 major) Mathemat	cs (2019)			
Master's w	ith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 (rd Master (120 ECTS) Informa		page 42 / 162

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Computer Science (2025)

Module title				Abbreviation	
Multim	Multimodal User Interfaces 10-HCI=MMUI-161-m01				
Module coordinator				Module offered by	
holder	of the (Chair of Computer Scienc	e IX	Institute of Comput	er Science
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	graduate			
Conten	ts				
The multimodal interaction paradigm simultaneously uses various modalities like speech, gesture, touch, or gaze, to communicate with computers and machines. Basically, multimodal interaction includes the analysis as well as the synthesis of multimodal utterances. This course concentrates on the analysis, i.e., the input processing. Input processing has the goal to derive meaning from signal to provide a computerized description and understanding of the input and to execute the desired interaction. In multimodal systems, this process is interleaved between various modalities and multiple interdependencies exist between simultaneous utterances necessary to take into account for a successful machine interpretation. In this course, students will learn about the necessary steps involved in processing unimodal as well as multimodal input. The course will highlight typical stages in multimodal processing. Using speech processing as a primary example, they learn about: 1. A/D conversion 2. Segmentation 3. Syntactical analysis 4. Semantic analysis 5. Pragmatic analysis 6. Discourse analysis 6. Discourse analysis 7. Pragmatic analysis 7. Pragmatic analysis 7. Aspecific emphasize will be on stages like morphology and semantic analysis. Typical aspects of multimodal interdependencies, i.e., temporal and semantic interrelations are highlighted and consequences for an algorithmic processing are derived. Prominent multimodal integration (aka multimodal fusion) approaches are described, including transducers, state machines, and unification.					
		ning outcomes			
standin	g of all		olved and will know p	prominent algorithmi	es. They will have a broad under- c solutions for each of them. Stu- s.
Course	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (2)				
		eessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
Langua credital	ge of a ble for		•		
Allocat	ion of p	olaces			
Additional information					
Focuses HCI,GE.		able for students of the N	laster's programme li	nformatik (Computer	Science, 120 ECTS credits):
Worklo	ad				
150 h					

Teaching cycle

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

§ 22 II Nr. 3 b)
Module appears in
Master's degree (1 major) Computer Science (2016)
Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Computational Mathematics (2016)
Master's degree (1 major) Computer Science (2017)
Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Master's degree (1 major) Aerospace Computer Science (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Computer Science (2025)

Module title				Abbreviation		
Computability Theory 10-I=BER-161-mo1						
Module coordinator Module offered by						
		es Informatik (Compute	er Science)	Institute of Comput	er Science	
ECTS	1	od of grading	Only after succ. cor	1		
	1	rical grade				
5 Duratio		Module level	Other prerequisites			
	-					
1 seme		graduate				
Conten						
			ions, decidable and co ability, Turing reductio			
Intend	ed lear	ning outcomes				
ons, de	ecidabl	e and countable sets, ł	l and applicable knowl nalting problem, m-red degrees, arithmetic hie	ucibility, creative and		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	rman)		
V (2) +	Ü (2)					
		Sessment (type, scope, lang ole for bonus)	guage — if other than German,	examination offered — if no	ot every semester, informati	ion on whether
	-	nation (approx. 60 to 1				
prox. 1 Langua credita	5 minut	tes per candidate). ssessment: German ar bonus	áapprox. 20 minutes) oi nd/or English			
Allocal		JIACES				
 Additic		ormation				
			Mastaria nragramma l	nformatile (Computer		ara dita).
	IT,IS,GE		e Master's programme I	nformatik (Compute	r Science, 120 ECTS (credits):
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)		
Module appears in						
Master's degree (1 major) Computer Science (2016)						
Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Computer Science (2017)						
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019)						
	-	ee (1 major) Computati ee (1 major) Mathemat		9)		
Imaster	Jucgi	ee (I majoi) mathemat	(2019)			
Master's w	ith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 ord Master (120 ECTS) Informa		page 46 / 162



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title				Abbreviation		
Bioinformatics 07-BI-161-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. con	·		
5		rical grade				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten		undergradate				
-		principles of bioinform	atics			
		ning outcomes				
	-		or the analysis of DNA a	nd protein database	26	
			s, language — if other than Ger			
	-	iumber of weekly contact hour	s, language — If other than Gel	man)		
V (2) +		• • • • •				
		S essment (type, scope, lang Ile for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informati	ion on whether
lf anno examir prox. 1	unced nation c 5 minut age of a	of one candidate each (tes per candidate). ssessment: German ar	eginning of the course, approx. 20 minutes) or			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cvcl	e				
Referre	d to in	IPOI (examination regulation	ons for teaching-degree progra	mmes)		
				inines)		
Module	20002	arc in				
		ee (1 major) Computer	Science (2016)			
	-	ee (1 major) Mathemat				
	-		onal Mathematics (201	6)		
	-	ee (1 major) Computer				
Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) Computational Mathematics (2019)						
Master's degree (1 major) Mathematics (2019)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
	Master's degree (1 major) Computational Mathematics (2022)					
	Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computational Mathematics (2024)					
	-	ee (1 major) Computati ee (1 major) Mathemat		4)		
			-			
Master's w	ith 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 48 / 162



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Compiler SubscriptionIo-I=CB-161-m01Module offered byModule offered byInstitute of Computer ScienceInstitute of Computer ScienceOnly after succ. com J. of module(s)5Module levelOnly after succ. com J. of module(s)5Only after succ. com J. of module(s)5Only after succ. com J. of module(s)5Module levelOther prerequisites5Module levelOther prerequisites5Module levelOther prerequisites5Module levelOther prerequisites1S1S1SContent:Lexical subsists subtactic analysis, subtactic analysis, compiler substaction.					
holder of the Chair of Computer Science II Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents					
ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents					
5 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents					
Duration Module level Other prerequisites 1 semester graduate Contents					
Duration Module level Other prerequisites 1 semester graduate Contents					
1 semester graduate Contents					
Contents					
Intended learning outcomes					
The students possess knowledge in the formal description of programming languages and their compilation.					
They are able to perform transformations between them with the help of finite automata, push-down automata and compiler generators.					
Courses (type, number of weekly contact hours, language — if other than German)					
$V(2) + \ddot{U}(2)$					
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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus					
Allocation of places					
Additional information					
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,IS,GE					
Workload					
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Module appears in Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019)					
Master's with 1 major Computer Science (2018) JMU Würzburg • generated 19-Apr-2025 • exam. page 50 / 162 reg. data record Master (120 ECTS) Informatik - 2018					

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Computer Science (2018)

Module title				Abbreviation		
Deductive Databases				10-I=DDB-172-m01		
Module	coordi	nator		Module offered by		
Dean of	Studie	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	numer	ical grade				
Duration	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	S					
relation	al data		ods for Datalog; Nega	tion and stratificatio	fixpoint theory; Connection to on; Structural properties of logic programs.	
Intende	d learr	ning outcomes				
They are	e able t	nave fundamental and pro- to compactly implement of nce and other properties.	declarative programs		iding negation). ompare existing programs w.r.t.	
Courses	(type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)		
V (2) + Ü	Ĵ (2)					
		essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
lf annou examina prox. 15 Languag	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus					
Allocati	on of p	laces				
Additior	nal info	ormation				
Focuses SE, IT, IS		ble for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): AT,	
Workloa	ad					
150 h						
Teachin	g cycle	9				
Referred	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) eXtended Artificial Intelligence (xtAl) (2020) Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)						

Module title				Abbreviation		
Logic P	rogram	iming			10-I=LP-172-m01	
Module	coord	inator		Module offered by		
holder	of the C	Chair of Computer Science	e l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
prograr gregatio cepts li	nming ons. Co ke con:	language Prolog: recursion nnection to (deductive) of straint logic programming	on, predicate-oriented latabases. Comparis	d programming, bacl	lution. Introduction to the logic ktracking, cut, side effects, ag- ort introduction of advanced con-	
Intende	ed learr	ning outcomes				
	ct and o	declarative programs in P			g. They are able to implement ne traditional imperative pro-	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) +	Ü (2)					
		e ssment (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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus						
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse: SE, IT, I		able for students of the M	laster's programme Ir	nformatik (Computer	Science, 120 ECTS credits): AT,	
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) computer Science (2018) Master's degree (1 major) Information Systems (2019)						
Master'	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
Supple	mentar	y course MINT Teacher Eo	ducation PLUS, Elite N	Network Bavaria (ENI	B) (2020)	

Module title				Abbreviation	
E-Learning				10-l=EL-161-m01	
Module	coord	inator		Module offered by	
holder	of the Q	Chair of Computer Science	e VI	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten		0			
intellige stems,	ent tuto adapti	oring systems, student m ve tutoring systems, com	odels, didactics, prol	olem-oriented learni	standards for learning systems, ng and case-based training sy- aluation of learning systems.
		ning outcomes			
The stuplicatio		oossess a theoretical and	l practical knowledge	about eLearning an	d are able to assess possible ap-
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + İ	Ü (2)				
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)			
lf annou examin prox. 15	unced l ation o 5 minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	inning of the course, prox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Focuses SE,IT,IS			laster's programme li	nformatik (Computer	Science, 120 ECTS credits):
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)					

Master's degree (1 major) Media Communication (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title				Abbreviation	
Program	nming	with neural nets			10-I=PNN-182-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e VI	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
		NN, implementation of in res, among others in the			and LSTMs, practical example for
Intende	ed learn	ning outcomes			
and how	w they		ools like Tensorflow/	•	nitectures (eg. FCN, CNN, LSTM) gram network structures from lite-
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + l	Ü (2)				
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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap-					
prox. 15	; minut ge of a	es per candidate). ssessment: German and/			
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Focuses IT, IS, H		able for students of the M	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): SE,
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Computer Science (2018)					
Master's degree (1 major) Information Systems (2019)					
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
Juppiel	mental	y course minist reached EC		NCTIVOIN DAVAIIA (EINI	שן (2020)

Module title Abbreviation						
Machin	e Lear	ning for Natural Langua	ge Processing		10-I=NLP-182-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Compute	r Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
ents sta ground almost beddin ke CNN training applica Intende The par and are Course V (2) + Methoo written If anno examin	The lecture conveys advanced knowledge about methods in computational text processing. To this end, it presents state of the art models and techniques in the area of machine learning, as well as their technical back- ground, and their respective applications in Natural Language Processing. As one important building block of almost all modern NLP-models, different techniques for learning representations of words, so called Word Em- beddings, are presented. Starting from this we cover, among others, models from the area of Deep Learning, li- ke CNNs, RNNs and Sequence-to-Sequence architectures. The theoretical foundations of these models, like their training with Backpropagation, are also covered in depth. For all models presented in the lecture, we show their application to problems like sentiment analysis, text generation and machine translation in practice. Intended learning outcomes The participants have solid knowledge on problems and methods in the area of computational text processing and are able to identify and apply suitable methods for a specific task. Courses (type, number of weekly contact hours, language – if other than German) V (2) + Ü (2) 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. 6o to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate).					
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse IS, HCI.		able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECTS o	credits): AT,
Worklo	ad					
150 h						
Teachiı	ıg cycl	e				
Referre	d to in	LPOI (examination regulation	ons for teaching-degree progra	ammes)		
Module	e appea	ars in				
Master Master Master Master	Module appears in Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
waster's wi	in 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 57 / 162



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Computer Science (2018)

Module	Module title				Abbreviation	
Introdu	ction i	nto Human-Computer I	nteraction		10-I=HCI-161-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	nce IX	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequisites						
1 semester graduate						
Conten		0				
Human-Computer Interaction is concerned with the design, evaluation and implementation of interactive com- puting systems for human use and with the study of major phenomena surrounding them. This course gives an introduction into the principle biological, physiological, and psychological constraints as defined by the human user and relates these constraints to the conceptual and technical solutions of today's computer systems and existing as well as prospective interaction metaphors between humans and computers. The course covers topics about human perception and cognition, memory and attention, the design of interacti- ve systems, prominent evaluation methods, the principles of computer systems, typical input processing tech- niques, interface technology, and examples of typical interaction metaphors, from text-based input to graphical desktops to multimodal interfaces. Accompanying lab-work will introduce students to typical tasks involved in this field, i.e., prominent evaluation methods and prototyping of interfaces. Intended learning outcomes						
comput	ter syst	se, the students will ha ems. They will understa e necessary steps appl	and the constraints and	d capabilities of curr	ent user interfaces a	
Courses	S (type, r	number of weekly contact hours	, language — if other than Ger	man)		
V (3) + ĺ	Ü (1)					
		sessment (type, scope, lang le for bonus)	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether
	ge of a	of project results (appro ssessment: German an bonus				
Allocati	ion of _l	olaces				
Additio	nal inf	ormation				
Focuses	s availa	able for students of the	Master's programme li	nformatik (Computer	Science, 120 ECTS o	credits): HCL
Worklo						
150 h						
Teachin						
	.5 cycl					
Doforro	d to in					
Kelelle	u to m	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module Master			Science (cost)			
	-	ee (1 major) Computer S ee (1 major) Digital Hun				
	-	ee (1 major) Computer S				
	-	ee (1 major) Computer S				
	-	ning degree Gymnasiun		ion PLUS. Elite Netwo	ork Bavaria (ENB) (20	020)
		y course MINT Teacher				,
		r Computer Science (2018)	JMU Würzbı	rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa	exam.	page 59 / 162



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title				Abbreviation		
Embed	ded Sy	stems			10-I=ES-161-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
8	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Its		·			
Models of embedded systems, implementation methods (ASIC, AISIP, micro controller), verification of embedded systems, implementation planning static, periodic and dynamic, binding problems, hardware synthesis, software synthesis.						
Intende	ed lear	ning outcomes				
	nportai	are familiar with the tech nt techniques for the mod				
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (4) +	Ü (2)					
		sessment (type, scope, langua	ge — if other than German, o	examination offered — if no	t every semester, informati	on on whether
		le for bonus)				
examin prox. 1 Langua	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus					
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Focuse AT,SE,E		able for students of the N E	laster's programme l	nformatik (Computer	Science, 120 ECTS o	credits):
Worklo	ad					
240 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	e appea	ars in				
Master's degree (1 major) Computer Science (2016)						
Master	Master's degree (1 major) Mathematics (2016)					
	-	ee (1 major) Computation				
		hing degree Gymnasium				016)
		ry course MINT Teacher E		Network Bavaria (EN	B) (2016)	
	-	ee (1 major) Computer Sc				
	-	ee (1 major) Computer Sc		`		
	-	ee (1 major) Computation		9)		
		ee (1 major) Mathematics		Irg ● generated 19-Apr-2025 ●	exam	page 61 / 162
				rd Master (120 ECTS) Informa		Page 01 / 102

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2022) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Aerospace Computer Science (2023)

Module	Module title Abbreviation							
Analys	is and I	Design of Programs			10-I=PA-161-m01			
Module	e coord	inator		Module offered by				
holder	of the (Chair of Computer Scien	nce II	II Institute of Computer Science				
ECTS	1	od of grading		Only after succ. compl. of module(s)				
5	1	rical grade						
Duratio		Module level	Other prerequisites					
1 seme		graduate						
Conten								
Program analysis, model creation in software engineering, program quality, test of programs, process models.								
Intend	ed lear	ning outcomes						
The stu quality		are able to analyse pro	grams, to use testing fr	ameworks and metri	cs as well as to judg	e program		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	man)				
V (2) +	-							
		essment (type scope land	uage — if other than German,	examination offered — if no	t even comester informat	ion on whether		
		le for bonus)			a every semester, monnat	on on whether		
		nation (approx. 60 to 1						
			eginning of the course, approx. 20 minutes) or					
		es per candidate).	approx. 20 minutes) of		i ili gioups oi 2 callu	iuales (ap-		
		ssessment: German an	Id/or English					
	ble for		0 · ·					
Allocat	tion of p	olaces						
			,					
Additic	onal inf	ormation						
Focuse	es availa		Master's programme I	nformatik (Computer	Science, 120 ECTS	credits):		
SE,IS,E								
Worklo								
150 h								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)				
Module	e appea	ars in						
Master	's degr	ee (1 major) Computer S	Science (2016)					
Master	's degr	ee (1 major) Mathemati	ics (2016)					
Master	's degr	ee (1 major) Physics (20	016)					
Master's degree (1 major) Nanostructure Technology (2016)								
Master's degree (1 major) Computational Mathematics (2016)								
			n MINT Teacher Educat			016)		
		•	Education PLUS, Elite	Network Bavaria (EN	B) (2016)			
	-	ee (1 major) Computer :						
	-	ee (1 major) Computer (`				
	-		onal Mathematics (201	9)				
Master	's degr	ee (1 major) Mathemati	cs (2019)					
Master's w	ith 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 63 / 162		

Master's degree (1 major) Information Systems (2019) Master's degree (1 major) Nanostructure Technology (2020) Master's degree (1 major) Physics (2020) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Physics International (2020) Master's degree (1 major) Quantum Engineering (2020) Master's degree (1 major) Quantum Technology (2021) Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Module title				Abbreviation				
Informa	ation R	etrieval			10-l=IR-161-m01			
Module	e coord	inator		Module offered by				
Dean of	f Studi	es Informatik (Compute	er Science)	Institute of Comput	er Science			
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)				
5		rical grade		•				
Duratio		Module level	Other prerequisites	i				
1 seme		graduate						
Conten		Sidduite						
IR models (e. g. Boolean and vector space model, evaluation), processing of text (tokenising, text properties), data structures (e. g. inverted index), query elements (e. g. query operations, relevance feedback, query langua- ges and paradigms, structured queries), search engine (e. g. architecture, crawling, interfaces, link analysis), me- thods to support IR (e. g. recommendation systems, text clustering and classification, information extraction).								
Intende	ed lear	ning outcomes						
		possess theoretical an know-how to create a s		n the area of informa	ation retrieval and ha	ave acquired		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	rman)				
V (2) +		·						
Method	d of ass	s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether		
examin prox. 15	ation c 5 minut ge of a	by the lecturer at the b of one candidate each (tes per candidate). ssessment: German ar bonus	approx. 20 minutes) or					
Allocat	ion of _l	olaces						
Additio	nal inf	ormation						
Focuse: IT,IS,HC		able for students of the	Master's programme I	nformatik (Computer	r Science, 120 ECTS o	credits):		
Worklo	ad							
150 h			,,					
Teachir	ng cvcl	e						
	0 . 7							
Referre	d to in	LPO I (examination regulati	ons for teaching-degree progra	ammec)				
	<u>u to in</u>							
Module	annes	ars in						
			Science (2016)					
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016)								
Master's degree (1 major) Computational Mathematics (2016)								
Master's degree (1 major) Digital Humanities (2016)								
		hing degree Gymnasiur				016)		
	Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)							
		ee (1 major) Computer						
	-	ee (1 major) Computer		-				
		ee (1 major) Computati		9) Jrg • generated 19-Apr-2025 •	exam.	page 65 / 162		
				rd Master (120 ECTS) Informa		,		

Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title				Abbreviation				
3D Use	er Interf	aces			10-HCI=3DUI-161-m	01		
Module	e coord	inator		Module offered by				
holder	of the C	Chair of Computer Scien	nce IX	Institute of Comput	er Science			
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)				
5	nume	rical grade						
Duratio	on	Module level	Other prerequisites					
1 semester graduate								
Conten	Its							
lopmer to learr ques. E on, the tegratin practic deo. Pr betwee and htt	This module will give students the opportunity to learn about the specificities of 3D User Interfaces (3DUI) deve- lopment using Virtual, Augmented or Mixed Reality technologies. The module content will be mainly dedicated to learn and practice the skills essential to the design and implementation of high-quality 3D interaction techni- ques. Design guidelines as well as classical and innovative 3D Interaction techniques will be studied. In additi- on, the course will address novel research themes such as 3D interaction for large displays and games; and in- tegrating 3DUIs with mobile devices, robotics, and the environment. Students will be assessed through a group practical project (team work), which will consist of a program, a presentation, a technical report (2 ages) and a vi- deo. Previous years, the assignment replicated the IEEE 3DUI Contest 2011, where teams of students competed between each other to find the best solution (see results at https://www.youtube.com/watch?v=gYs-pBW7Agc and https://www.youtube.com/watch?v=gYs-pBW7Agc)							
		ning outcomes						
spatial spatial	After the course, the students will gain a solid background on the theory and the methods to create your own 3D spatial interfaces. They will have a broad understanding of the particular difficulties of designing and developing spatial interfaces, as well as evaluating then. Students will also learn about traditional and novel 3D input/output devices (e.g., motion tracking system and Head-mounted Display).							
Course	S (type, n	umber of weekly contact hour	s, language — if other than Ge	rman)				
V (2) +	Ü (2)							
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether		
•	age of a	of project results (appro ssessment: German an bonus	-					
Allocat	ion of p	olaces						
Additio	onal info	ormation						
Focuse HCI,GE		able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECTS o	credits):		
Worklo	ad							
150 h								
Teachi	ng cycl	e						
Referred to in LPO I (examination regulations for teaching-degree programmes)								
§ 22	Nr. 3 b)							
Module	e appea	irs in						
Master Master	Moule appears in Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's degree (1 major) Computer Science (2017)							
Master's w	ith 1 major	Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 67 / 162		

Master's degree (1 major) Computer Science (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Julius-Maxi

UNIVERSITÄT

WÜRZBURG

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computer Science (2021)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Computer Science (2023)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Computer Science (2025)

Module title					Abbreviation			
Compu	tationa	l Complexity II			10-I=KT2-161-m01			
Module	e coord	inator		Module offered by				
Dean of	fStudie	es Informatik (Compute	r Science)	Institute of Comput	er Science			
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)				
5 numerical grade								
Duratio	n	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts	0	•					
		NP-complete sets, autor stic algorithms.	educibility, interactive	proof systems, poly	nomial time hierarch	ıy, complexi-		
Intende	ed learı	ning outcomes						
		oossess a fundamental ty, interactive proof sys						
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	man)				
V (2) +	Ü (2)							
Method	d of ass	essment (type, scope, langu	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether		
		le for bonus)						
lf anno examin prox. 15	unced ation o 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a res per candidate). ssessment: German an bonus	ginning of the course, approx. 20 minutes) or					
Allocat	ion of p	olaces						
Additio	nal inf	ormation						
Focuse: SE, IT, E		able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits): AT,		
Worklo	ad							
150 h								
Teachir	ng cycl	e						
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)				
Module	appea	irs in						
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)								
Master's wi	th 1 majoi	r Computer Science (2018)		rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 69 / 162		



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Computer Science (2018)

Module title				Abbreviation			
Artificia	al Intel	ligence 1			10-l=Kl1-161-m01		
Module	e coord	inator		Module offered by			
holder	ofthe	Chair of Computer Scier	ice VI	Institute of Comput	er Science		
ECTS	r	od of grading		r succ. compl. of module(s)			
5		rical grade					
Duration Module level Other prerequisites			i				
1 seme		graduate					
Conten		Sidduite	1				
Intellig	ent age	ents, uninformed and he and predicate logic and			search with partial	information,	
Intende	ed lear	ning outcomes		· ·			
The stu	dents	possess theoretical and gic and are able to asse			gence in the area of	agents,	
Course	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)			
V (2) +	Ü (2)						
		S essment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informat	ion on whether	
lf anno examin prox. 1 <u>9</u>	unced ation o 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a tes per candidate). Issessment: German an bonus	eginning of the course, approx. 20 minutes) of				
Allocat	ion of	places					
Additio	nal inf	ormation					
	s availa	able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits):	
Worklo	ad						
150 h							
Teachi	ng cvcl	e					
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progr	ammes)			
Module	appea	ars in					
		ee (1 major) Computer S	Science (2016)				
	-	ee (1 major) Mathemati					
	Master's degree (1 major) Muthematics (2010) Master's degree (1 major) Physics (2016)						
Master's degree (1 major) Nanostructure Technology (2016)							
Master	's degr	ee (1 major) Computatio	onal Mathematics (201	.6)			
Master	's teac	hing degree Gymnasiun	n MINT Teacher Educat	ion PLUS, Elite Netwo	ork Bavaria (ENB) (2	016)	
		ry course MINT Teacher		Network Bavaria (EN	B) (2016)		
		ee (1 major) Computer S					
	-	ee (1 major) Computer S					
Master	's degr	ee (1 major) Computatio	onal Mathematics (201	.9)			
Master's wi	ith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • ord Master (120 ECTS) Informa		page 71 / 162	

Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's degree (1 major) Nanostructure Technology (2020) Master's degree (1 major) Physics (2020) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Physics International (2020) Master's degree (1 major) Quantum Engineering (2020) Master's degree (1 major) Quantum Technology (2021)

Module title				Abbreviation			
Artificial Intelligence 2 10-I=Kl2-161-m01							
Module	e coord	linator		Module offered by	Module offered by		
		Chair of Computer Scie	nce VI	Institute of Comput	er Science		
ECTS	1	od of grading	Only after succ. con	· · ·			
5	1	rical grade					
Duratio		Module level	Other prerequisites	4			
1 semester graduate							
	Contents						
		babilistic closure and E	avesian networks util	ity theory and decida	hility problems lear	rning from	
observ	ations,	knowledge while learn ing of natural language	ing, neural networks a				
Intend	ed lear	ning outcomes					
		possess theoretical and ing and language proce				probabilistic	
Course	S (type,	number of weekly contact hour	s, language — if other than Ge	rman)			
V (2) +	Ü (2)						
		sessment (type, scope, lang	guage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether	
		nation (approx. 60 to 1					
examir prox. 1	nation o 5 minu age of a	by the lecturer at the b of one candidate each (tes per candidate). assessment: German ar bonus	approx. 20 minutes) or				
Allocat	tion of	places					
Additio	onal inf	ormation					
Focuse AT,SE,I		able for students of the GE	Master's programme I	nformatik (Compute	r Science, 120 ECTS (credits):	
Worklo	bad						
150 h	_						
Teachi	ng cyc	le					
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)			
	_			· ·			
Module	e appe	ars in					
		ree (1 major) Computer	Science (2016)				
	-	ree (1 major) Mathemat					
	Master's degree (1 major) Computational Mathematics (2016)						
1		hing degree Gymnasiur				016)	
		ry course MINT Teacher		Network Bavaria (EN	B) (2016)		
	-	ree (1 major) Computer ree (1 major) Computer					
1	-	ree (1 major) Computer		9)			
1	-	ree (1 major) Mathemati		<i></i>			
A4							
Master's w	uth 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 73 / 162	

Master's degree (1 major) Information Systems (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)

Module title Abbreviation				
Performance Evaluation of Distributed Systems 10-I=LVS-161-m01				
Module coordinator Module offered by				
holder of the Chair of Computer Science III Institute of Computer Science				
ECTS Method of grading Only after succ. compl. of module(s)				
8 numerical grade				
Duration Module level Other prerequisites				
1 semester graduate				
Contents				
Traffic theoretic models, fundamental concepts of theory of probability, transformation techniques, processes, methods for performance analysis of technical systems, queue-/traffic theory, analysis of non-Markov and time critical systems, matrix analytical method, practical examples for performance computer systems and networks: throughput and goodput analysis and other characteristics.	f Markov,			
Intended learning outcomes				
The students possess the methodic knowledge and the practical skills necessary to model technical means of the theory of probability and mathematical statistics.	systems by			
Courses (type, number of weekly contact hours, language — if other than German)				
V (4) + Ü (2)				
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, informati module is creditable for bonus)	on on whether			
examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 cand prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus	idates (ap-			
Allocation of places				
Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS of AT,IT,GE	credits):			
Workload				
240 h				
Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module appears in				
Master's degree (1 major) Computer Science (2016)				
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016)				
Master's degree (1 major) Computational Mathematics (2016)				
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (20	016)			
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)				
Master's degree (1 major) Computer Science (2017)				
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019)				
Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)				
Master's with 1 major Computer Science (2018) JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record Master (120 ECTS) Informatik - 2018	page 75 / 162			



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2022) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022)

Module title			Abbreviation		
Mathen	natical	Logic			10-l=ML-161-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
		logic, first-order predicat ncompleteness theorem,			pleteness theorem, Tarski theo- of elemental arithmetic.
Intende	ed learn	ning outcomes			
predica theoren	te logi n, unde	c, proof and deduction, G ecidability and nonaxiom	ödel's completeness atisability of element	theorem, Tarski the tal arithmetic.	propositional logic, first-order orem, Gödel's incompleteness
		umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + l	Ü (2)				
		essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	unced l ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	inning of the course, prox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses AT,SE,IS		able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits):
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	appea	rs in			
Module appears in Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)					



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title				Abbreviation		
Medical Informatics 10-I=MI-161-m01						
Modul	e coord	linator		Module offered by		
holder	of the	Chair of Computer Scie	nce VI	Institute of Comput	er Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Durati		Module level	Other prerequisites			
1 seme	1 semester graduate					
	Contents					
mary a	nd fund	ient folder, coding of m ctional units, medical d case-based training sys	ecision making and as	sistance systems, st		
Intend	ed lear	ning outcomes				
The stu medici		possess theoretical and	d practical knowledge a	about the application	n of computer scienc	e methods in
Course	es (type, i	number of weekly contact hour	s, language — if other than Ge	rman)		
V (2) +	Ü (2)					
		sessment (type, scope, lang ble for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
credita	age of a able for tion of		nd/or English			
Additio	onal inf	ormation				
	es avail S,HCI,G	able for students of the E	Master's programme I	nformatik (Computer	r Science, 120 ECTS (credits):
Worklo	bad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ummes)		
Modul	e appe	ars in				
		ee (1 major) Computer :	Science (2016)			
	Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2016)					
Master's degree (1 major) Computational Mathematics (2016)						
		hing degree Gymnasiur				016)
		ry course MINT Teacher ee (1 major) Computer S		Network Bavaria (EN	B) (2016)	
	-	ee (1 major) Computer :				
	-	ee (1 major) Computer		9)		
	-	ree (1 major) Mathemati				
Mactal	(ith :	r Computer (cierce (co.o)			0.Y2m	nage == 1 : (-
waster's w	nın 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 79 / 162



Master's degree (1 major) Information Systems (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module title Ab					Abbreviation		
Performance Engineering & Benchmarking of Computer Systems			10-I=PEB-161-m01				
Module	e coord	inator		Module offered by			
holder	of the (Chair of Computer Scien	nce II	Institute of Comput	er Science		
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	graduate					
Conten	ts						
			ring of commercial soft oftware systems, mode				
Intende	ed leari	ning outcomes					
ment te	echniqu	ies, multi-factorial vari	l and applicable knowle ance analysis, data ana , resource demand app	lysis with R, benchn	nark approaches, mo		
Course	S (type, n	umber of weekly contact hour	s, language — if other than Ger	man)			
V (2) +	Ü (2)						
		essment (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if no	t every semester, informati	on on whether	
examin prox. 1	ation o 5 minut 1ge of a	f one candidate each (es per candidate). ssessment: German an	eginning of the course, approx. 20 minutes) or id/or English				
Allocat	ion of p	olaces					
Additio	onal info	ormation					
Focuse SE,IT,E			Master's programme li	nformatik (Computer	Science, 120 ECTS o	redits):	
Worklo	ad						
150 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)			
		•					
Module	e appea	ars in					
		ee (1 major) Computer :	Science (2016)				
	-	ee (1 major) Mathemati					
	-		onal Mathematics (201				
			n MINT Teacher Educati			o16)	
		ee (1 major) Computer :	Education PLUS, Elite I	Network Bavaria (EN	B) (2016)		
		ee (1 major) Computer :					
	-		onal Mathematics (201	9)			
		ee (1 major) Mathemati					
Mactaria	ith a	(Computer Science ()	18.811.1.872	ra concreted to Arman	a avam	page 0 + 1 - (
waster's w	itri i majoi	Computer Science (2018)		rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 81 / 162	

Master's degree (1 major) Information Systems (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)

Module title				Abbreviation			
Profess	sional F	Project Management			10-I=PM-182-m01		
Module	e coord	inator		Module offered by			
holder	of the (Chair of Computer Scier	nce III	Institute of Computer Science			
ECTS	Metho	od of grading	Only after succ. con	nly after succ. compl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate	We recommend com	pleting module 10-1	=PRJAK in parallel.		
Conten	ts			·	·		
manage munica ment; c quality prograr	Project goals, project assignment, project success criteria, business plan, environment analysis and stakeholder management, initialisation, definition, planning, execution/control, finishing of projects, reporting, project communication and marketing, project organisation, team building and development, opportunity and risk management; conflict and crisis management, change and claim management; contract and procurement management, quality management, work techniques, methods and tools; leadership and social skills in project management, program management, multiproject management, project portfolio management, PMOs; peculiarities of software projects; agile project management/SCRUM, combination of classic and agile methods.						
Intende	ed lear	ning outcomes					
fession	al proj	possess practically rele ect management. They and review projects.					
Course	S (type, r	umber of weekly contact hour	s, language — if other than Gei	rman)			
V (4)							
module is written If annou examin prox. 15 Langua	examin examin unced ation c minut ge of a	eessment (type, scope, lang le for bonus) nation (approx. 60 to 12 by the lecturer at the be of one candidate each (res per candidate). sessment: German an	20 minutes). eginning of the course, approx. 20 minutes) or	the written examina	tion may be replace	d by an oral	
credita							
Allocat	ion of p	Diaces					
	s availa	ormation able for students of the HCI, GE.	Master's programme I	nformatik (Computer	Science, 120 ECTS (credits): SE,	
Worklo	ad						
150 h							
Teachir	ng cycl	e					
Referre	d to in	LPOI (examination regulation	ons for teaching-degree progra	immes)			
Module	e appea	irs in					
Master Master Master Master Master	Module appears in Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Management (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's with 1 major Computer Science (2018) JMU Würzburg • generated 19-Apr-2025 • exam. page 83 / 162						
uster s wi	in i majo			rd Master (120 ECTS) Informa		page 83 / 162	



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) exchange program Business Management and Economics (2022)

Module title				Abbreviation			
Compu	iter Ari	thmetic			10-I=RAM-161-m01		
Module	e coord	linator		Module offered by			
holder	of the	Chair of Computer Scie	nce II	Institute of Comput	er Science		
ECTS	1	od of grading	Only after succ. con	· · ·			
5	1	rical grade					
Duratio		Module level					
1 semester graduate							
Conten		Sidduite					
Spaces	s of nur	merical computation, ra	ster and rounding, def	inition and impleme	ntation of computati	onal arithme-	
	-	ning outcomes					
		possess knowledge ab	out the spaces of num	prical computation r	actor and roundings	dofinition	
		ntation of computation	•	•			
rithms.							
Course	S (type,	number of weekly contact hour	s, language — if other than Ge	rman)			
V (2) +	Ü (2)						
Metho	d of as	sessment (type, scope, lang	guage — if other than German,	examination offered — if no	t every semester, informat	ion on whether	
module is	s credital	ole for bonus)					
lf anno examir prox. 1	ounced nation o 5 minu age of a	nation (approx. 60 to 1 by the lecturer at the b of one candidate each (tes per candidate). assessment: German ar bonus	eginning of the course, approx. 20 minutes) or				
Allocat							
Additio	onal inf	ormation					
		able for students of the	Master's programme I	nformatik (Compute	r Science, 120 ECTS (credits):	
Worklo	nad						
150 h							
Teachi	ng cyc	۵					
Teacin	ing cycl						
Deferre	d to in						
Referre		LPO I (examination regulati	ons for teaching-degree progra	ammes)			
		!					
Module			Science (cost)				
	-	ee (1 major) Computer ee (1 major) Mathemat					
	-			6)			
	Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
		ry course MINT Teacher		Network Bavaria (EN	B) (2016)		
	-	ree (1 major) Computer					
1	-	ree (1 major) Computer		0)			
1	-	ree (1 major) Computati ree (1 major) Mathemati		9)			
Imaster	Jucgi	ee (Emajor) mathemati	(2017)				
Master's w	vith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 (rd Master (120 ECTS) Informa		page 85 / 162	

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module	title				Abbreviation
Robotic	S 1				10-l=R01-182-m01
Module	coord	inator		Module offered by	
holder	of the C	hair of Computer Scienc	e XVII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semester graduate					
Conten	ts				
homoge tor conf Worksp se dyna lonome	History, applications and properties of robots, direct kinematics of manipulators: coordinate systems, rotations, homogenous coordinates, axis coordinates, arm equation. Inverse kinematics: solution properties, end effector configuration, numerical and analytical approaches, examples of different robots for analytical approaches. Workspace analysis and trajectory planning, dynamics of manipulators: Lagrange-Euler model, direct and inverse kinematics, propulsion system, tricycle, Ackermann steering, holonomes and non-holonome restrictions, kinematic classification of mobile robots, posture kinematic model. Movement control and path planning: roadmap methods, cell decomposition methods, potential field methods.				
	•	ning outcomes			
		naster the fundamentals cs and dynamics as well			are, in particular, familiar with ion.
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (4) + l Module		t in: 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
module is	creditab	le for bonus)			
Separat	te writt ge of a	nation (approx. 60 to 90 n en examination for Maste ssessment: English bonus			
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses ES, LR,			laster's programme Ir	nformatik (Computer	Science, 120 ECTS credits): IS,
Worklo	ad				
240 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module					
Master' Master'	Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)				

Module	title				Abbreviation	
Robotics 2				10-l=RO2-152-m01		
Module	coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	ice XVII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
8	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		•			
feedba stems:	ck and founda	f dynamic systems, cor feed-forward, state obs ations of stochastics, ra lication examples, prob	erver, feedback with s ndom processes, stoc	tate observer, time o hastic dynamic syste	liscrete systems, sto ems, Kalman filter: d	chastic sy-
Intende	ed lear	ning outcomes				
tions of se the c	^f roboti connec	master all fundamentals cs. The students posse tions between the dual also recognise the relati	ss a knowledge of adv pairs controllability - c	anced controller and observability as well	l observer methods a as controller design	and recogni- and observer
Courses	S (type, r	umber of weekly contact hours	, language — if other than Ger	man)		
V (4) +	Ü (2)					
		sessment (type, scope, langu le for bonus)	uage — if other than German, o	examination offered — if no	ot every semester, informat	ion on whether
written credital		nation (approx. 60 to 90 bonus	o minutes)			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse: ES, LR	s availa	able for students of the	Master's programme l	nformatik (Computer	r Science, 120 ECTS (credits): IT,
Worklo	ad					
240 h						
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)		
§ 22						
Module	appea	urs in				
Master's degree (1 major) Space Science and Technology (2015) First state examination for the teaching degree Gymnasium Computer Science (2015) Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019)						
Master's wi	th 1 maio	r Computer Science (2018)	IMIT Wingh	۔ ۱rg • generated 19-Apr-2025 •	exam	page 88 / 162
muster s WI	arimajo	Computer Jelence (2010)		rd Master (120 ECTS) Informa		page 00 / 102



Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Module	Module title Abbreviation						
Discrete Event Simulation 10-I=ST-161-m01							
Module	coord	inator		Module offered by			
holder	of the (Chair of Computer Scier	nce III	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
8	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts	5	1				
bles, ra measur limits o project:	ndom red dat f mode s.	o simulation technique sample theory and esti a, planning and evalua el creation and simulati	mation techniques, sta tion of simulation expe	tistical analysis of si riments, special ran	imulation values, ins dom processes, pos	spection of sibilities and	
Intende	ed lear	ning outcomes					
	cal) sys	possess the methodic k stems, the evaluation o s.					
Course	S (type, r	umber of weekly contact hours	s, language — if other than Ge	man)			
V (4) +	Ü (2)						
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether	
lf anno examin prox. 15	unced ation c 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (res per candidate). ssessment: German an	eginning of the course, approx. 20 minutes) or				
Allocat		JIALES	<u> </u>				
		ormation		a			
Focuse: IT,IS,ES		able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits):	
Worklo	ad						
240 h							
Teachir	ıg cycl	e					
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)			
Module	e appea	irs in					
Master	's degr	ee (1 major) Computer S	Science (2016)				
	-	ee (1 major) Mathemati					
	-	ee (1 major) Computatio					
		ning degree Gymnasiun				016)	
		y course MINT Teacher		Network Bavaria (EN	B) (2016)		
	-	ee (1 major) Computer S ee (1 major) Computer S	-				
	-	Computer Science (2018)		Irg • generated 19-Apr-2025 •	exam.	page 90 / 162	
				rd Master (120 ECTS) Informa		2420 90 / 102	

Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) eXtended Artificial Intelligence (xtAl) (2020)

Module	e title				Abbreviation
Real-Ti	ime Inte	eractive Systems			10-HCI=RIS-182-m01
Module	e coord	inator		Module offered by	
holder	of the (Chair of Computer Scienc	e IX	Institute of Compu	ter Science
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	graduate			
Conten	Its		·		
human-computer systems. Such systems are typically found in perceptual computing, Virtual, Augmented, Mixed Reality, computer games, and cyber-physical systems. Lately, these systems are often termed Real-Time Interac- tive Systems (RIS) due to their common aspects. The course covers theoretical models derived from the requirements of the application area as well as common hands-on and novel solutions necessary to tackle and fulfill these requirements. The first part of the course will concentrate on the conceptual principles characterizing real-time interactive systems. Questions answered are: What are the main requirements? How do we handle multiple modalities? How do we define the timeliness of RIS? Why is it important? What do we have to do to assure timeliness? The second part will introduce a concep- tual model of the mission-critical aspects of time, latencies, processes, and events necessary to describe a sy- stem's behavior. The third part introduces the application state, it's requirements of distribution and coherence, and the consequences these requirements have on decoupling and software quality aspects in general. The last part introduces some potential solutions to data redundancy, distribution, synchronization, and interoperability. Along the way, typical and prominent state-of-the-art approaches to reoccurring engineering tasks are discussed. This includes pipeline systems, scene graphs, application graphs (aka field routing), event systems, entity and component models, and others. Novel concepts like actor models and ontologies will be covered as alternative solutions. The theoretical and conceptual discussions will be put into a practical context of today's commercial and research systems, e.g., X3D, instant reality, Unity3d, Unreal Engine 4, and Simulator X.					
After th physio gical cl can ex to solv to deve	Intended learning outcomes After the course, the students will have a solid understanding of the boundary conditions defined by both, the physiological and psychological characteristics of the human users as well as by the architectures and technolo- gical characteristics of today's computer systems. Participants will gain a solid understanding about what they can expect from today's technological solutions. They will be able to choose the appropriate approach and tools to solve a given engineering task in this application area and they will have a well-founded basis enabling them to develop alternative approaches for future real-time interactive systems.				
V (2) +		number of weekly contact hours, l			
Metho	d of ass	Sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if n	ot every semester, information on whether
lf anno examir prox. 1	unced nation c 5 minut age of a	of one candidate each (ar tes per candidate). ssessment: German and	inning of the course, oprox. 20 minutes) or		ation may be replaced by an oral n in groups of 2 candidates (ap-

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): HCI. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions).

Workload

150 h

Teaching cycle

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

§ 22 II Nr. 3 b)

Module appears in

Master's degree (1 major) Computer Science (2018)

Master's degree (1 major) Information Systems (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computer Science (2021)

Master's degree (1 major) Information Systems (2022)

Master's degree (1 major) Computer Science (2023)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Computer Science (2025)

Module title Abbreviation							
Softwa	re Arch	itecture			10-I=SAR-161-m01		
Module	e coord	inator		Module offered by			
holder	of the (Chair of Computer Scier	nce II	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts		- 1				
tural st sed sof cloud-n model-	yles, so tware e native a driven	o software architecture, oftware components, in engineering, service-ori and serverless computin architecture	terface models and de ented architectures, m	sign guidelines, des icroservice architect	ign-by-contract, com ures, scalability of d	ponent-ba- atabases,	
Intende	ed lear	ning outcomes					
		possess a fundamental n modern software arch					
Course	S (type, r	number of weekly contact hours	s, language — if other than Ger	man)			
V (2) +	Ü (2)						
		sessment (type, scope, lang le for bonus)	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether	
lf anno examin prox. 15	unced ation c 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (ces per candidate). ssessment: German an	eginning of the course, approx. 20 minutes) or				
Allocat							
Allocal		Jaces					
 Additio	nalinf	ormation					
Focuse	s availa	able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits):	
SE,IT,ES							
Worklo	ad						
150 h							
Teachir	ng cycl	e					
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)			
§ 22	Nr. 3 b)						
Module	e appea	ars in					
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017)							
	-	ee (1 major) Computer S					
Master's wi	ith 1 majo	r Computer Science (2018)		rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 94 / 162	

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Module studies (Master) Computer Science (2019) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Management (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's degree (1 major) Economathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Information Systems (2025) Master's degree (1 major) Management (2025) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Economathematics (2025)

Module title					Abbreviation
Spacecraft System Design					10-l=SSD-152-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Scienc	e VII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
orbits, o angle o on of th lemetry generat	disturb f incide ermal , telecc tion: so	ance forces, transfer orbi ence. Thermal control of s designs. Telecommunica ommando). Structure and	its. Mission analysis: satellites: thermal and tion: ground contact I mechanisms. Energy	earth and sun-synch alysis, thermal desig analysis, data transr y systems: primary, s	cs: two-body dynamics, Kepler nronous orbits, shadows, solar gn and technologies, verificati- mission, satellite monitoring (te- secondary, management, power echanical, electrical). Operation
		ning outcomes			
		naster system aspects of s and their integration in			g the example of spacecraft, ma-
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (4) + l	Ü (2)				
		e essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written credital		nation (approx. 60 to 120 bonus	minutes)		
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses LR	s availa	able for students of the M	laster's programme Ir	nformatik (Computer	Science, 120 ECTS credits): ES,
Worklo	ad				
240 h					
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree program	mmes)	
§ 22 II Nr. 3 b)					
Module appears in					
Master's degree (1 major) Space Science and Technology (2015) First state examination for the teaching degree Gymnasium Computer Science (2015) Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021)					

Master's with 1 major Computer Science (2018)

Module titl	e	Abbreviation			
Machine Learning (for User Interfaces) 10-HCI=MLUI-161-m01					
Module coo	ordinator		Module offered by		
holder of th	ne Chair of Computer Scienc	ce IX	Institute of Comput	er Science	
ECTS Me	thod of grading	Only after succ. con	npl. of module(s)		
5 nui	merical grade				
Duration	Module level	Other prerequisites	;		
1 semester	graduate				
Contents					
Machine learning is the science of getting computers to act without being explicitly programmed. In the past de- cade, machine learning has given us practical speech recognition, effective web search, self-driving cars, and a vastly improved understanding of the human genome. Machine learning is so pervasive today that you probab- ly use it dozens of times a day without knowing it. It is one of today's prominent paradigms in HCI applicable in all areas where the understanding of user input of high variability, specifically for natural interactions using, e.g., gesture, speech, or eye-gaze, is paramount. Many researchers also think it is the best way to make progress to- wards human-level Al. In this course, students will learn about the most effective machine learning techniques, and gain practice im- plementing them and getting them to work. Students not only learn the theoretical underpinnings of learning, but also gain the practical know-how needed to quickly and powerfully apply these techniques to new problems. Finally, they learn about some of Silicon Valley's best practices in innovation as it pertains to machine learning and Al. This course provides a broad introduction to machine learning, data-mining, and statistical pattern recognition. Topics include: (i) Supervised learning (parametric/non-parametric algorithms, support vector machines, ker- nels, neural networks). (ii) Unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning). (iii) Best practices in machine learning (bias/variance theory; innovation process in machine learning and Al). The course will also draw from numerous case studies and applications, so that you'll also learn how to apply learning algorithms to building gesture-based and multimodal interfaces, text and speech under- standing (web search, anti-spam), smart robots (perception, control), computer vision, medical informatics, au-					
	ase mining, and other areas carning outcomes				
After the co gies, e.g., l Students w rious applie	burse, the students will be a ike Octave. In addition, the ill be able to choose the ap cation area, specifically in F	y will be able to deriv propriate approach a ICI.	e main principles and and tools to solve a gi	eir own using assistive technolo- d apply these in own programs. iven machine learning task in va-	
	be, number of weekly contact hours,	language — if other than Ge	rman)		
V (2) + Ü (2)					
	assessment (type, scope, langua itable for bonus)	age — if other than German,	examination offered — if no	t every semester, information on whether	
presentation of project results (approx. 40 minutes) Language of assessment: German and/or English creditable for bonus					
Allocation of places					
Additional	information				
Focuses av HCI,GE.	ailable for students of the N	Aaster's programme l	nformatik (Computer	Science, 120 ECTS credits):	
Workload					
150 h					

Master's with 1 major Computer Science (2018)

Teaching cycle

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

§ 22 II Nr. 3	; b)
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2 22 II NI. 3 D)
Module appears in
Master's degree (1 major) Computer Science (2016)
Master's degree (1 major) Mathematics (2016)
Master's degree (1 major) Computational Mathematics (2016)
Master's degree (1 major) Computer Science (2017)
Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computational Mathematics (2022)
Master's degree (1 major) Mathematics (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)
Master's degree (1 major) Computer Science (2025)

Module title				Abbreviation	
Probabilistic Inference					10-I=PI-172-m01
Module	coord	inator		Module offered by	
Dean of	Studie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
ference port Ve	in Tree ctor Ma	es, Maximum likelihood, achines, Computer Vision	Learning Markov Ran	dom Fields, Approxi	kov Networks, Factor Graphs, In- mate Inference, Sampling, Sup-
Intende	d learı	ning outcomes			
The stu method		are able to master probat	oilistic inference and	to program small py	thon programs for applying these
Courses	5 (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + ĺ	Ü (2)				
		s essment (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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus					
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Focuses IT, IS, H		able for students of the M	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): AT,
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module					
	-	ee (1 major) Computer Sc			
Master'	Master's degree (1 major) Computer Science (2018)				

Module title					Abbreviation	
Visualization of Graphs					10-I=VG-161-m01	
Module coordinator			Module offered by			
holder	of the (Chair of Computer Scienc	e l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Contents					
<i>phenth</i> the pla	<i>eorie (/</i> nar sep	overs the most important Algorithmic Graph Theory parator theorem will be us prithms to optimise these	<i>i</i>) such as divide and sed. We will become	conquer, flow netwo	orks, integer program	nming and
Intende	ed lear	ning outcomes				
		its get an overview of gra ge about the modelling a				
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
V (2) +	Ü (2)					
		Sessment (type, scope, langua ile for bonus)	ge — if other than German, o	examination offered — if no	t every semester, informati	on on whether
prox. 1	5 minut ige of a	of one candidate each (ar tes per candidate). ssessment: German and, bonus		an oral examination	in groups of 2 cand	idates (ap-
Allocat	ion of _l	olaces				
Additio	nal inf	ormation				
Focuse AT,IT,H		able for students of the N	laster's programme l	nformatik (Computer	Science, 120 ECTS o	credits):
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§ 22	Nr. 3 b)					
Module appears in						
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's teaching degree Gymnasium MiNT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)						
		r Computer Science (2018)	JMU Würzbı	ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 100 / 162

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Computer Science (2025)

Master's degree (1 major) Mathematical Data Science (2025)

Module t	itle	Abbreviation		
Selected	Topics of Games Engineering		10-I=AGE-191-m01	
Module c	coordinator		Module offered by	
holder of	the Chair of Computer Scienc	e IX	Institute of Comput	er Science
ECTS N	Nethod of grading	Only after succ. com	pl. of module(s)	
5 n	numerical grade			
Duration	Module level	Other prerequisites		
1 semest	er graduate			
Contents	i			
Selected	chapters of Games Engineerir	ıg.		
Intended	learning outcomes			
	ents understand the basic app problems in this area and app			le to understand the solutions of
Courses ((type, number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + Ü	(2)			
	of assessment (type, scope, langua reditable for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus				
Allocatio	n of places			
Additiona	al information			
Focuses a	available for students of the N	laster's programme Ir	nformatik (Computer	r Science, 120 ECTS credits): GE.
Workload	d			
150 h				
Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module appears in				
	degree (1 major) Computer Sc			
Master's	degree (1 major) Computer Sc	ience (2021)		

Module title					Abbreviation	
Selecte	Selected Topics in Algorithms 10-I=AKA-161-m01					
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scien	ce l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Contents					
		s in algorithmics.				
		ning outcomes				
The stu	dents	understand the basic ap		•		erstand the
		number of weekly contact hours		•		
V (2) +				inanj		
module is	creditab	sessment (type, scope, langu le for bonus)		examination offered — if no	t every semester, informati	on on whether
lf annoi examin prox. 15	unced ation c 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a ses per candidate). ssessment: German and bonus	ginning of the course, approx. 20 minutes) or			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse: AT	s availa	able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECTS o	credits):
Worklo	ad					
150 h						
Teachir	ng cvcl	e				
	<u> </u>	-				
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)		
Module appears in						
Master'	's degr	ee (1 major) Computer S	cience (2016)			
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Computer Science (2017)						
Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) Computational Mathematics (2019)						
Master's degree (1 major) Mathematics (2019)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
	Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021)					
mastel	Jucgi					
Master's wi	ith 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 103 / 162



Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022)

Module title					Abbreviation	
Selected Topics in Theory			10-I=AKT-161-m01			
Module	coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	nce l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade		· · · · ·		
Duratio		Module level	Other prerequisites			
1 seme		graduate				
Contents						
		s in theory.				
		•				
		ning outcomes				unter al the
		understand the basic approximation of the basic				rstand the
Course	S (type, r	number of weekly contact hours	, language — if other than Gei	man)		
V (2) +	Ü (2)					
		Sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
		nation (approx. 60 to 12	 no minutes)			
		by the lecturer at the be		the written examina	tion may be replace	d by an oral
		of one candidate each (a	approx. 20 minutes) or	an oral examination	in groups of 2 cand	idates (ap-
		es per candidate).	d / a w Ew aliab			
credita		ssessment: German an bonus	d/or English			
Allocati						
Allocal		Jaces				
		ormation				
					C :	
AT	s availa	able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECIS (credits):
Worklo	ad					
150 h						
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Computer Science (2016)						
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Computer Science (2017)						
Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) Computational Mathematics (2019)						
Master's degree (1 major) Mathematics (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Master's degree (1 major) Aerospace Computer Science (2020)						
	-	ee (1 major) Computer S	•	,		
Master's wi	th 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 105 / 162



Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022)

Module title					Abbreviation	
Selected Topics in Software Engineering					10-I=AKSE-161-m01	
Module	coord	inator		Module offered by		
holder	of the C	Chair of Computer Science	e ll	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade		-		
Duratio	1	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten						
		s in software engineering				
		ning outcomes	D •			
		possess an advanced kno	wladge about coloct	od asports of softwa	are ongineering	
				· · · · · · · · · · · · · · · · · · ·		
		umber of weekly contact hours, l	anguage — If other than Ger	man)		
V (2) +						
		s essment (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 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus Allocation of places						
Additio	nal info	ormation				
Focuses	s availa	able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): SE.	
Worklo			·	· · · · ·		
150 h						
Teachir	ng cycl	<u>e</u>				
	13 0 0 0	•				
Deferre	d to in	LPOI (examination regulations	- C			
Referre		LFUI (examination regulations	s for teaching-degree progra	mmes)		
Module appears in						
	Master's degree (1 major) Computer Science (2016)					
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Computer Science (2017)						
	Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)					
	-	ning degree Gymnasium I		on PLUS. Flite Netwo	ork Bavaria (FNB) (2020)	
		y course MINT Teacher Ed				
		ee (1 major) Aerospace Co			-, (,	
	-	ee (1 major) Computer Sc	•	- /		
	-	ee (1 major) Aerospace Co		21)		

Module title					Abbreviation
Selecte	Selected Topics in IT Security				10-I=AKITS-172-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e II	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
Selecte	d topic	s in IT security.			
Intende	ed learr	ning outcomes			
		possess an advanced kno lems in this area and to ti			e able to understand solutions to
Courses	5 (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + Í Module		t in: English			
		s essment (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	unced l ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: English	inning of the course,		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses IS, LR, H			laster's programme li	nformatik (Computer	Science, 120 ECTS credits): SE,
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master'	Master's degree (1 major) Computer Science (2017)				
	-	ee (1 major) Computer Sc			
		ning degree Gymnasium N			
		y course MINT Teacher Ed			В) (2020)
Master's degree (1 major) Aerospace Computer Science (2020)					

Module title					Abbreviation	
Selecte	Selected Topics in Internet Technologies 10-I=AKIT-161-m01					
Module	e coord	inator		Module offered by		
holder	ofthe	Chair of Computer Scien	ce III	Institute of Comput	er Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	1 semester graduate					
Conten	ts					
Selected topics in computer communication, for example design aspects of future internet structures: setup and control structures of the internet, multicast protocols, protocols for multimedia communication, optical networks, control mechanisms for redundant and real-time communication networks, p2p networks, ad-hoc networks, or new concepts and technologies in mobile communication: digital modulation, signal propagation, channel coding, modern transmission technologies (adaptive modulation and coding, hybrid ARQ, OFDM, MI-MO), mac layer, mobileIP, routing in ad-hoc networks, vertical handover, UMTS IP multimedia subsystem, or planning and management methods in telecommunication networks: planning methods (forward engineering, reverse engineering), network management paradigms (central and decentral), framework for network management (IETF traffic engineering, ITU-T TMN, OSI management), planning and management methods (IP management (IETF traffic engineering, ITU-T TMN, OSI management), planning and management tools, outlook and perspectives, or other current topics. Intended learning outcomes The students have a knowledge of advanced and current topics in the management and design of modern wired and wireless communication systems. Courses (type, number of weekly contact hours, language – if other than German) $V(2) + \dot{U}(2)$ Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether						
written If anno examin prox. 1	exami unced nation o 5 minut uge of a ble for		ginning of the course, pprox. 20 minutes) or			
٨٩٩:+:-	naling	ormation				
		able for students of the I	Master's programmo l	nformatik (Computor	Science 120 FCTS	redits). IT
					Science, 120 ECIS (
Workload						
150 h						
Teaching cycle						
 Poferred to in LDO L (contraction to the lange of the						
	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module		ars in				
Master	's degr	ee (1 major) Computer S hing degree Gymnasium		ion PLUS, Flite Netwo	ork Bavaria (FNB) (20	016)
		r Computer Science (2018)	JMU Würzbı	Irg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa	exam.	page 109 / 162



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021)

Master's degree (1 major) Aerospace Computer Science (2021)

Module title					Abbreviation
Selecte	d Topi	cs in Intelligent Systems			10-I=AKIS-161-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e VI	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
Selecte	d topic	s in intelligent systems.			
Intende	ed learn	ning outcomes			
		possess an advanced kno plex problems in this are			. They are able to understand so- ns.
Courses	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + ĺ	Ü (2)				
		e essment (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
examin prox. 15	ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	prox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses	s availa	able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): IS.
Workloa	ad				
150 h					
Teachin	ng cycl	9			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)					

Module title					Abbreviation
Selected Topics in Embedded Systems					10-I=AKES-161-m01
Module coordinator				Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5		rical grade			
Duratio		Module level	Other prerequisites		
1 semes		graduate			
Conten		3			
		s in embedded systems.			
		ning outcomes			
The stu	dents p				They are able to understand so- ns.
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + İ	Ü (2)				
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	written examination (approx. 60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English				
Allocati	ion of r	places			
Additio	nal inf	ormation			
			lastor's programmo li	aformatik (Computer	Science, 120 ECTS credits): ES.
Worklo			laster s programme n		Science, 120 ECTS creatis). ES.
	au				
150 h					
Teachir	ig cycl	8			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2016)					
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)					
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017)					
	-				
Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
		y course MINT Teacher Ed			D) (2020)
	-	ee (1 major) Aerospace Co		20)	
	-	ee (1 major) Computer Sc		24)	
master	Master's degree (1 major) Aerospace Computer Science (2021)				

Module title					Abbreviation	
NLP and Text Mining 10-I=STM-162-m01						
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scien	ce VI	Institute of Comput	er Science	
ECTS Method of grading Only after succ. compl. of module(s)						
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		•			
tection, stic par The stu text min	, token sing, w dents µ ning an	n the following areas: d isation, collocation, N-g ord sense disambiguat possess theoretical and d language processing ave gained experience	ram models, morpholo ion, term extraction m practical knowledge a mostly for English. The	ogy, hidden Markov ethods, information about typical method ay are able to solve p	models for tagging, p extraction, sentimer Is and algorithms in problems through the	probabili- it analysis. the area of
Intende	ed learı	ning outcomes				
text mi	ning an	possess theoretical and Id language processing, ve gained experience ir	They are able to solve	practical problems		
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	man)		
V (2) +	Ü (2)					
Method	d of ass	sessment (type, scope, langu	uage — if other than German, e	examination offered — if no	t every semester, informati	on on whether
module is	creditab	le for bonus)				
lf anno examin prox. 15	unced l ation o 5 minut	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a ses per candidate). ssessment: German and	ginning of the course, approx. 20 minutes) or			•
Allocat			<u> </u>			
Additio	nal inf	ormation				
Focuse: IT, HCI.	s availa	able for students of the	Master's programme li	nformatik (Computer	Science, 120 ECTS o	credits): AT,
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 22 Nr. 3 b)						
Module appears in						
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's with 1 major Computer Science (2018) Master's with 1 major Computer Science (2018)						
waster's wi	tn 1 majoi	Computer Science (2018)		ırg ● generated 19-Apr-2025 ● rd Master (120 ECTS) Informa		page 113 / 162



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Mathematical Data Science (2025)

Julius-Maxi

UNIVERSITÄT

WÜRZBURG

Module title					Abbreviation	
Selected Topics in Aerospace Engineering 10-I=AKLR-161-m01						
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	ice VII	I Institute of Computer Science		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
stems, and do tions, p cial are stems, ment, s	sensor cking, o bayload as of n space space la	is in aerospace enginee s and actuators for orie design of space ships, o ls, optical systems, RAD avigation, space enviro astronomy and planet r aw, aeroflight topics, av air traffic management	ntation control, pertur design of planetary bas DAR, earth monitoring, nment, environment si nissions, space medic ionics for airplanes, ai	bation of orbits, inte ses, life support syst thermo managemen mulation, verificatio ine and biology, mat	rplanetary orbits, rer ems, special aspect t, structure of space n and test of space f erial science, quality	ndezvous s of opera- ships, spe- faring sy- / manage-
Intende	ed lear	ning outcomes				
		possess an advanced k e foundations in their fu			selected area and a	re able to
Course	S (type, r	umber of weekly contact hours	, language — if other than Ger	man)		
V (2) +	Ü (2)					
module is written If anno examin prox. 19 Separa	examin examin unced ation c 5 minut te writt ge of a	Eessment (type, scope, langule for bonus) nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a res per candidate). en examination for Mas ssessment: German an	o minutes). ginning of the course, approx. 20 minutes) or ster's students.	the written examina	tion may be replaced	d by an oral
Allocat						
Additio	nal inf	ormation				
Focuse	s availa	able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits): LR.
Worklo				· ·		
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Computer Science (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's with 1 major Computer Science (2018) Master's with 1 major Computer Science (2018)						
				rd Master (120 ECTS) Informa		-

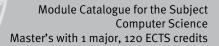
Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021)

Module title				Abbreviation	
Selected Topics in HCI					10-I=AKHCI-182-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e IX	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
Selecte	d topic	s in HCI.			
Intende	d learr	ning outcomes			
		understand the basic app omplex problems in this a			ney are able to understand the tions.
Courses	5 (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + l	(2) S/Ľ				
		s essment (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	written examination (60 to 120 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 (approx. 20 minutes) or an oral examination in groups of 2 candidates (ap- prox. 15 minutes per candidate). Language of assessment: German and/or English				
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses	s availa	able for students of the M	aster's programme li	nformatik (Computer	Science, 120 ECTS credits): HCI.
Worklo				· ·	
150 h					
Teachir	ig cycle	e			
Referre	d to in	LPO I (examination regulations	for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021)					

Module title					Abbreviation
Selected Topics in Computer Science					10-I=AKII-182-m01
Module	coord	inator		Module offered by	
Dean of	Studie	es Informatik (Computer S	Science)	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
Selecte	d topic	s in computer science.			
Intende	d learr	ning outcomes			
		are able to understand th d questions.	e solutions to comple	ex problems in comp	outer science and to transfer
Courses	5 (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + ĺ	Ü/S (2)				
		e ssment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
examin prox. 15	ation o ; minut ge of a:	f one candidate each (ap es per candidate). ssessment: German and/	prox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachin	ıg cycl	9			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) eXtended Artificial Intelligence (xtAl) (2020)					
	-	ee (1 major) Computer Sc ee (1 major) Aerospace Co		21)	
Master's degree (1 major) Aerospace Computer Science (2021)					





Projects and Tarining

(ECTS credits)

Module title				Abbreviation	
Space Systems Design				10-I=RSE-182-m01	
Module	coord	inator		Module offered by	
holder	of the O	Chair of Computer Science	e VIII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
craftsys from th	stem is e area	done anew each semest	er and draws inspirat	ion from current trer	m. The selection of the space- ids and concrete research, often tion and observation of transient
Intende	ed learn	ning outcomes			
elemen help of	tary de the acc in the a	sign aspects, create requ quired knowledge of metl area of spacecraft system	irements accordingly hods they are able to	and consider them create dedicated to	ms. They are able to analyse the in their system design. With the ols and methods to support the opment of spacecraft systems
Courses	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
R (6)					
		s essment (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
Langua Assessi not be a	ge of a ment o anothe		or English which the course is a	offered (The project	will not be repeated; there will offered for the project offered in
Allocati		· ·			
Additio	nal info	ormation			
Focuses	s availa				Science, 120 ECTS credits): LR.
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computer Science (2025)					

Module title Abbreviation						
Design of Planetary Bases and Orbital Stations 10-I=EPB-182-m01						
Module	coord	inator		Module offered by		
holder	of the C	Chair of Computer Scier	ice VIII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
plannin compor se etc) constru produc	ng of pla nents li The mo oction a tion, tra	re human settlements a anetary bases. This will ke satellites. The conte ost important aspects li and operation scenarios ansport between earth and analyzed.	train the planning of a nt will be decided upo ke motivation, goals, p , planning of modules	n very complex space n each semester (for prerequisites, constra and structures, lifes	ecraft apart from its i r example lunar base aints, environment, l upport, energy, com	ndividual e, mars ba- ocalization, munication,
<u> </u>		ning outcomes				
le to an suppor the plar	The students gain fundamental knowledge about the planning of planetary bases and orbital bases. They are ab- le to analyse the elementary aspects of planning, pose requirements and consider the system design. With the support of the acquired knowledge of methods they are able to create dedicated tools and processes to support the planning in the area of planetary bases and orbital stations. Also projectmanagement for the development of planetary bases and orbital stations will be trained.					
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	rman)		
R (6)						
		e essment (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if no	t every semester, informati	on on whether
Each pr same to Langua	oject is opic. As ge of a	(10 to 15 pages) and pr s offered one time only. ssessment can, therefo ssessment: German an ffered: In the semester	The project will not be re, only be offered for t d/or English	repeated; there will he project offered in		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
		able for students of the Subsection 3 Sentence		· · · · ·	Science, 120 ECTS o	redits): LR.
Worklo	ad					
300 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	ins in				
Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computer Science (2025)						
	_	· · · · ·	-			
waster's wi	un 1 major	Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 121 / 162

Practical course - Rocket Engineering and Payloads 10-I=PRT-182-m01 Module cordinator Institute of Computer Science VIII Institute of Computer Science ECTS Method for Gomputer Science VIII Institute of Computer Science Io (not) successfully completed - Duration Module level Other prerequisites - Isemester graduate - - Contents - - - In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes	Module title					Abbreviation
holder of the Chair of Computer Science VIII Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 10 (not) successfully completed Duration Module level Other prerequisites 1 semester graduate Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge go to tocket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language — if other than German. P P (c) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) placement report (a to s pages) and presentation of results (1s to 30 minutes)	Practica	Practical course - Rocket Engineering and Payloads				10-I=PRT-182-m01
Method of grading Only after succ. compl. of module(s) 10 (not) successfully completed Duration Module level Other prerequisites 1 semester graduate Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge about tocket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment: (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (a to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Additional information Foccuses available for students of the Master's programme Informati	Module	coord	inator		Module offered by	
10 (not) successfully completed Duration Module level Other prerequisites 1 semester graduate Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge ge about rocket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every senseter, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places	holder	of the O	hair of Computer Scienc	e VIII	Institute of Comput	er Science
Duration Module level Other prerequisites 1 semester graduate Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge ge about to cket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language – if other than German) P P (6)	ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
1 semester graduate Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes In this internship, students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge about rocket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language – if other than German) P P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Morkload 300 h Referred to in LPO 1 (examination regulations for teaching-degree programmes) Module appears in	10	(not) s	successfully completed			
Contents In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowled- ge about rocket science, including launch preparations as well as the execution. They are able to analyse the ele- mentary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger pro- jects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Duratio	n	Module level	Other prerequisites		
In this internship, students are supposed to acquire practical experience in the design, building, execution and analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket ex- periments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowled- ge about rocket science, including launch preparations as well as the execution. They are able to analyse the ele- mentary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger pro- jects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places 	1 semes	ster	graduate			
analysis of rocket experiments (including their payload). The goal is the design, building and testing of rocket experiments and their payloads. Intended learning outcomes The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowledge about rocket science, including launch preparations as well as the execution. They are able to analyse the elementary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger projects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Content	ts				
The students gain fundamental knowledge about the design of spacecraft experiments, fundamental knowled- ge about rocket science, including launch preparations as well as the execution. They are able to analyse the ele- mentary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger pro- jects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	analysi	s of roo	ket experiments (includi			
ge about rocket science, including launch preparations as well as the execution. They are able to analyse the ele- mentary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger pro- jects. Courses (type, number of weekly contact hours, language – if other than German) P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO 1 (examination for teaching-degree programmes) Module appears in	Intende	ed learn	ning outcomes			
P (6) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	ge abou mentary the aid	ge about rocket science, including launch preparations as well as the execution. They are able to analyse the ele- mentary design aspects of rocket payloads, pose according requirements and respects those in the design. With the aid of the acquired methodic knowledge, they are able to apply dedicated tools and method in bigger pro-				
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
module is creditable for bonus) placement report (4 to 5 pages) and presentation of results (15 to 30 minutes) Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	P (6)					
Language of assessment: German and/or English Allocation of places Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in				ge — if other than German, e	examination offered — if no	t every semester, information on whether
Additional information Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in					(15 to 30 minutes)	
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Allocati	ion of p	olaces			
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in						
Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions). Workload 300 h Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Additio	nal info	ormation			
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Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	Worklo	ad				
Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in	300 h					
 Module appears in	Teaching cycle					
 Module appears in						
••	Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
••						
Master's degree (1 major) Computer Science (2018)	Module	appea	rs in			
	Master'	s degre	ee (1 major) Computer Sc	ience (2018)		

Module title					Abbreviation
Aircraft	Aircraft Construction 10-I=FZB-182-m01				
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Scienc	e VIII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
 e S Ta Q D B 	lement etting u asks ar uality a ocume uilding	ly of a RV12 small airplan s of the RV12 (aluminum up a project team ad allocation of responsil assurance ntation of the work s some elements of the R ¹ ng and PR activities	processing) pilities		
Intende	ed learr	ning outcomes			
comple aircraft	x and s constr	afety-critical projects. St	udents have technica	al, theoretical and pr	perience for the execution of actical knowledge concerning t construction e.g. electrical sy-
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
R (6)					
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
	ge of a	(10 to 15 pages) and pres ssessment: German and, bonus		5 to 30 minutes)	
Allocati	ion of p	olaces			
Additio	nal info	ormation			
		able for students of the <i>N</i> Subsection 3 Sentence 8			Science, 120 ECTS credits): LR.
Worklo	ad				
300 h	300 h				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	in a state of the			
	-	ee (1 major) Computer Sc			
	-	ee (1 major) Computer Sc			
	-	ee (1 major) Computer Sc ee (1 major) Computer Sc	-		
Master's degree (1 major) Computer Science (2025)					

Module	Module title Abbreviation					
Flight Simulator					10-I=FSIM-182-m01	
Module	coord	inator		Module offered by	Module offered by	
holder	of the (Chair of Computer Scienc	e VIII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
		o cockpit, instruments in ght execution, taxing, tak			and dark start of an a320, flight nd emergencies	
Intende	ed leari	ning outcomes				
		possess the technical, the sis no licence to fly and i	-	_	ills to do a flight with an a320.	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
R (6)						
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
Separat	te writt ge of a	(10 to 15 pages) and pres en examination for Maste ssessment: German and/ bonus	er's students.	5 to 30 minutes)		
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
		able for students of the M Subsection 3 Sentence 8			Science, 120 ECTS credits): LR.	
Worklo	ad					
300 h						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	ins in				
	-	ee (1 major) Computer Sc				
Master'	s degr	ee (1 major) Computer Sc	ience (2021)			

Module title					Abbreviation		
Game Research Lab - Theory					10-l=GRLT-182-m01		
Module	e coord	inator		Module offered by			
holder	ofthe	Chair of Computer Scie	nce IX	Institute of Comput	er Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
The Game Research Labs are project-oriented, master-level courses. In accordance with the definition of Ga- mes Engineering, they concern themselves with the effective provision and the systematic application of prin- ciples, methods and tools for the development and application of comprehensive software systems for compu- ter games. There are four different directions of Game Research Labs: Theory, Applications, Design and Architec- ture. All of them implement a scientific process during which the students develop a project based on preceding works and a novel idea or hypothesis worthwhile exploring. Typical steps in a Game Research Lab include a short literature survey, the development of a concept, its realisation and evaluation. Theoretical foundations of Ga- mes Engineering as well as their transfer and application are the focus of the "Game Research Lab - Theory". This comprises the application, extension and innovation of formal representations, mathematics, algorithmics, for instance in the areas of computer graphics, realtime physics computation or artificial intelligence. The applica- tion, adaptation and innovation of optimisation approaches, formal process descriptions and verification in the context of interactive simulations also lie in the scope of this Game Research Lab. Intended learning outcomes We recommend previous completion of basic courses in Games Engineering such as Interactive Computer Gra- phics, Asset Development and Interactive Artificial Intelligence. The Game Research Labs empower the students to retrace current scientific works in great detail, to improve their research skills and to deepen their expertise with respect to specific challenges in Games Engineering. Formal systems and their applications to challenges in Games Engineering are the focus of the "Game Research Lab - Theory". Accordingly, the students will deeply immerse themselves into relevant topics in order to learn about, understand and learn to apply existing theore- tical approaches. Their application to the res							
R (4)		number of weekly contact hour		-			
Metho		Sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informati	on on whether	
	, ige of a	(10 to 15 pages) and pr ssessment: German an bonus		15 to 30 minutes)			
Allocat	ion of	places					
Additio	nal inf	ormation					
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): GE. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions).							
Workload							
300 h							
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Master's w	ith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 125 / 162	

Module appears in

Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computer Science (2025)

Modul	e title		Abbreviation			
Game Research Lab - Architectures 10-I=GRAR-182-mo1						
Modul	e coord	inator		Module offered by		
holder	ofthe	Chair of Computer Scie	nce IX	Institute of Comput	er Science	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites	5		
1 seme	ester	graduate				
Conter	nts					
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Course	es (type, r	number of weekly contact hour	s, language — if other than Ge	rman)		
R (4)						
		sessment (type, scope, lang ole for bonus)	guage — if other than German,	examination offered — if no	ot every semester, informat	tion on whether
	age of a	(10 to 15 pages) and p ssessment: German ar bonus		15 to 30 minutes)		
Allocat	tion of	places				
Additio	onal inf	ormation				
		able for students of the Subsection 3 Sentence	, –		r Science, 120 ECTS	credits): GE.
Worklo	_					
300 h						
-	ng cycl	e				
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∕laster's w	vith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • ord Master (120 ECTS) Informa		page 127 / 162

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

Module appears in

Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computer Science (2025)

Module title					Abbreviation		
Game R	Game Research Lab - Design 10-I=GRDE-182-m01						
Module coordinator				Module offered by			
holder	of the (Chair of Computer Scienc	e IX	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
ciples, ter gam ture. Al works a literatu games tation o generat the use Intende We reco phics, H The Gan their re terms o life cycl deratio worlds for exan	The Game Research Labs are project-oriented, master-level courses. In accordance with the definition of Ga- mes Engineering, they concern themselves with the effective provision and the systematic application of prin- ciples, methods and tools for the development and application of comprehensive software systems for compu- ter games. There are four different directions of Game Research Labs: Theory, Applications, Design and Architec- ture. All of them implement a scientific process during which the students develop a project based on preceding works and a novel idea or hypothesis worthwhile exploring. Typical steps in a Game Research Lab include a short literature survey, the development of a concept, its realisation and evaluation. The design of virtual worlds and games is the focus of the "Game Research Lab - Design". It especially considers the design, import and presen- tation of complex and novel representations of computer graphics, haptics and audio, their (partially) automatic generation, the conceptualisation and implementation of virtual environments and levels, their presentation to the user/player as well as the design of user interfaces and innovative game mechanics. Intended learning outcomes We recommend previous completion of basic courses in Games Engineering such as Interactive Computer Gra- phics, Human-Computer Interaction, Asset Development or Game Development (corresponds with GameLab I). The Game Research Labs empower the students to retrace current scientific works in great detail, to improve their research skills and to deepen their expertise with respect to specific challenges in Games Engineering. In terms of contents, the "Game Research Lab - Applications" comprises knowledge and skills in the development life cycle of games, in the interdisciplinary discourse needed for applications in certain domains and in consi- deration of platform-specific programming requirements. Knowledge and skills regarding the design of virtual worlds and their presentation are the focus of the "Game Re						
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
R (4)							
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
	ge of a	(10 to 15 pages) and pres ssessment: German and, bonus	· · ·	15 to 30 minutes)			
Allocat	ion of p	olaces					
		ormation					
	Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): GE. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions).						
Worklo	Workload						
300 h	300 h						
Teachir	ng cycl	e					

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

Module appears in

Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computer Science (2025)

Module title					Abbreviation		
Game	Game Research Lab - Applications 10-I=GRAP-182-mo1						
Module coordinator Module offered by							
holder	ofthe	Chair of Computer Scier	nce IX	Institute of Comput	er Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts	·					
ciples, ter gan ture. A works literatu cations enterta stance space des de Intend We rec phics, Labs e to dee me Res interdi	The Game Research Labs are project-oriented, master-level courses. In accordance with the definition of Ga- mes Engineering, they concern themselves with the effective provision and the systematic application of prin- ciples, methods and tools for the development and application of comprehensive software systems for compu- ter games. There are four different directions of Game Research Labs: Theory, Applications, Design and Architec- ture. All of them implement a scientific process during which the students develop a project based on preceding works and a novel idea or hypothesis worthwhile exploring. Typical steps in a Game Research Lab include a short literature survey, the development of a concept, its realisation and evaluation. The "Game Research Lab - Appli- cations" aims at furthering or developing applications. While there are numerous viable application categories, entertainment and serious games are often considered first. Alternative categories of applications could, for in- stance, be remote control systems or social virtual worlds. These application categories, in turn, open up a vast space of application domains: Consider science, education and engineering. This Game Research Lab also inclu- des developing for specific target platforms such as specialised video consoles. Intended learning outcomes We recommend previous completion of basic courses in Games Engineering such as Interactive Computer Gra- phics, Human-Computer Interaction or Game Development (corresponds with GameLab I). The Game Research Labs empower the students to retrace current scientific works in great detail, to improve their research skills and to deepen their expertise with respect to specific challenges in Games Engineering. In terms of contents, the "Ga- me Research Lab - Applications" comprises knowledge and skills in the development life cycle of games, in the interdisciplinary discourse needed for applications in certain domains and in consideration of platform-specific						
		requirements.	. language — if other than Ge	rman)			
R (4)			,				
Metho		sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether	
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		able for students of the Subsection 3 Sentence 8			Science, 120 ECTS o	credits): GE.	
Worklo	oad						
300 h							
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Master's w	vith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 131 / 162	

Module appears in

Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computer Science (2025)

Module title Abbreviation							
Practical Course - Algorithms and Theory 1 10-I-PAT1-182-mo1							
Module coordinator Module offered by							
Dean o	f Studi	es Informatik (Comput	er Science)	Institute of Compu	ter Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites	i			
1 seme	ster	undergraduate					
Conten	its						
Comple	etion of	a practical task.					
		ning outcomes					
			work on a problem in al	gorithm and theory i	n teams.		
		· · · ·	rs, language — if other than Ge	<u> </u>			
R (6)							
module is report Langua	s creditab (10 t0 1	^{ile for bonus)} 5 pages) and presenta ssessment: German a	tion of results (15 to 30		ot every semester, information on whether		
Allocat		JIACES					
Additic	nalinf	ormation					
			Mastar's programma	nformatik (Computa	r Science, 120 ECTS credits): AT.		
Worklo				monnatik (Compute	T Science, 120 ECTS credits): AT.		
	au						
300 h	nacuel						
Teachi	ing cycl	e					
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Referre	a to in	LPUI (examination regulat	ions for teaching-degree progra	ammes)			
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Modul			Science (act?)				
	-	ee (1 major) Computer ee (1 major) Computer					
	Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023)						
	-	ee (1 major) Computer					

Module title Abbreviation							
Practical Course - Algorithms and Theory 2 10-I-PAT2-182-mo1							
Module coordinator Module offered by							
Dean o	of Studi	es Informatik (Compute	er Science)	Institute of Comput	ter Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	undergraduate					
Conter	nts						
Comple	etion of	a practical task.					
		ning outcomes					
			vork on a problem in al	gorithm and theorv i	n teams.		
		· · ·	s, language — if other than Ge	· · · ·			
R (6)				-			
		Sessment (type, scope, lang le for bonus)	guage — if other than German,	examination offered — if no	ot every semester, information on whether		
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Allocat	tion of	olaces					
Additio	onal inf	ormation					
Focuse	es avail	able for students of the	Master's programme l	nformatik (Compute	r Science, 120 ECTS credits): AT.		
Worklo				• •	. ,		
300 h							
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Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
Modul	e appea	ars in					
		ee (1 major) Computer	Science (2018)				
	-	ee (1 major) Computer					
	-	ee (1 major) Computer					
Master	r's degr	ee (1 major) Computer	Science (2025)				

Module title Abbreviation							
Practical Course - Software Engineering 1 10-I-PSE1-182-m01							
Module coordinator Module offered by							
Dean o	of Studi	es Informatik (Compute	r Science)	Institute of Compu	ter Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Durati	on	Module level	Other prerequisites	i			
1 seme	ester	undergraduate					
Conter	nts		- 1				
Compl	etion of	a practical task.					
		ning outcomes					
		allows participants to w	ork on a problem in sc	oftware engineering i	in teams.		
		number of weekly contact hours	·	<u> </u>			
R (6)							
^{module i} report Langua	s creditab (10 t0 1	^{le for bonus)} 5 pages) and presentat ssessment: German an	ion of results (15 to 30		ot every semester, information on whether		
Alloca	tion of	olaces					
Additi	onal inf	ormation					
Focuse	es availa	able for students of the	Master's programme I	nformatik (Compute	r Science, 120 ECTS credits): SE.		
Worklo				•			
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Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
Modul	e appea	ars in					
		ee (1 major) Computer S	Science (2018)				
Maste	r's degr	ee (1 major) Computer S	Science (2021)				
		ee (1 major) Computer S					
Maste	r's degr	ee (1 major) Computer S	Science (2025)				

Module title Abbreviation							
Practical Course - Software Engineering 2 10-I-PSE2-182-mo1							
Module coordinator Module offered by							
Dean o	of Studi	es Informatik (Compu	ter Science)	Institute of Comput	ter Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites	i			
1 seme	ester	undergraduate					
Conter	nts						
Comple	etion of	f a practical task.					
		ning outcomes					
	-		work on a problem in sc	oftware engineering i	n teams.		
			urs, language — if other than Ge				
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	tion of	-					
Additio	nal inf	ormation					
	-		Master's programme l	nformatik (Compute	r Science, 120 ECTS credits): SE.		
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Referre	ed to in	IPOI (examination regula	ations for teaching-degree progra	ammes)			
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Modul	e appea	ars in					
			r Science (2018)				
	Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021)						
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Master	r's degr	ee (1 major) Compute	r Science (2025)				

Module title Abbreviation							
Practical Course - Internet Technology 1 10-I-PIT1-182-m01							
Module coordinator Module offered by							
Dean o	of Studi	es Informatik (Computer	Science)	Institute of Comput	ter Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	undergraduate					
Conten	nts						
Comple	etion of	a practical task.					
		ning outcomes					
		allows participants to we	ork on a problem in in	ternet technology in	teams.		
		umber of weekly contact hours,					
R (6)							
module is report Langua	s creditab (10 t0 1	^{le for bonus)} 5 pages) and presentati ssessment: German and	on of results (15 to 30		ot every semester, information on whether		
	tion of						
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			Master's programme l	nformatik (Compute	r Science, 120 ECTS credits): IT.		
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	ווא נענו	6					
Referre	ad to in	LPO I (examination regulatio	ns for toaching dogroe progr	ummoc)			
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Modula	e appea	urs in					
		ee (1 major) Computer S	cience (2018)				
	-	ee (1 major) Computer S					
Master	Master's degree (1 major) Computer Science (2023)						
Master	's degr	ee (1 major) Computer S	cience (2025)				

Module title Abbreviation							
Practical Course - Internet Technology 2 10-I-PIT2-182-mo1							
Module coordinator Module offered by							
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	Its						
Comple	etion of	a practical task.					
		ning outcomes					
		allows participants to we	ork on a problem in in	ternet technology in	teams.		
		number of weekly contact hours,					
R (6)	- (.)[)						
module is report Langua	s creditab (10 t0 1	^{le for bonus)} 5 pages) and presentati ssessment: German and	on of results (15 to 30		ot every semester, information on whether		
Allocat	ion of	olaces					
Additio	onal inf	ormation					
Focuse	s avail	able for students of the	– Master's programme I	nformatik (Compute	r Science, 120 ECTS credits): IT.		
Worklo				× 1			
300 h							
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Referre	ed to in	LPOI (examination regulatio	ns for teaching-degree progra	mmes)			
Module	e appea	ars in					
Master	's degr	ee (1 major) Computer S	cience (2018)				
Master	Master's degree (1 major) Computer Science (2021)						
	-	ee (1 major) Computer S					
Master	's degr	ee (1 major) Computer S	cience (2025)				

Module title Abbreviation						
Practical Course - Intelligent Systems 1 10-I-PIS1-182-m01						
Modul	e coord	inator		Module offered by	J	
Dean o	f Studi	es Informatik (Compute	r Science)	Institute of Compu	ter Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	numerical grade					
Duration Module level Other prerequisites						
1 semester undergraduate						
Conten	its					
Comple	etion o	f a practical task.				
Intend	ed lear	ning outcomes				
The pra	actical	allows participants to w	ork on a problem in in	telligent systems in	teams.	
Course	S (type, I	number of weekly contact hours	, language — if other than Ge	rman)		
R (6)						
module i	s creditat	sessment (type, scope, lang ole for bonus) 5 pages) and presentat	-		ot every semester, information on whether	
	age of a	ssessment: German an		minutes)		
Allocat	ion of	places				
Additic	onal inf	ormation				
Focuse	s avail	able for students of the	Master's programme I	nformatik (Compute	er Science, 120 ECTS credits): IS.	
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)		
 Module	e appea	ars in				

Module title Abbreviation						
Practical Course - Intelligent Systems 2 10-I-PIS2-182-m01						
Modul	e coord	inator	/			
Dean c	of Studi	es Informatik (Compu	ter Science)	Institute of Compu	uter Science	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10						
			Other prerequisites	;		
1 semester undergraduate -						
Conter	nts					
Compl	etion o	f a practical task.				
Intend	ed lear	ning outcomes				
The pra	actical	allows participants to	work on a problem in in	telligent systems in	teams.	
-			urs, language — if other than Ge			
R (6)						
report Langua	(10 to 1	ssessment: German a	ation of results (15 to 30 nd/or English	minutes)		
Alloca	tion of	places				
Additio	onal inf	ormation				
Focuse	es avail	able for students of th	e Master's programme l	nformatik (Comput	er Science, 120 ECTS credits): IS.	
Worklo	oad					
300 h		<u>۵</u>				
300 h Teachi	ng cycl					
2	ng cycl					
Teachi			tions for teaching-degree progra	ammes)		
Teachi			tions for teaching-degree progra	ammes)		
Teachi Referro		LPOI (examination regula	tions for teaching-degree progra	ammes)		

Module title Abbreviation					
Practical Course - Embedded Systems 1 10-I-PES1-182-m01					
Module coordinator Module offered					<u>.</u>
Dean o	of Studi	es Informatik (Computer	Science)	Institute of Comput	ter Science
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade			
			Other prerequisites		
1 semester undergraduate					
Conten	nts		•		
Comple	etion of	f a practical task.			
		ning outcomes			
		allows participants to wo	ork on a problem in en	nbedded systems in	teams.
		number of weekly contact hours,	· · · · · · · · · · · · · · · · · · ·	*	
R (6)		, ,			
module is report Langua	s creditab (10 t0 1	^{lle for bonus)} 5 pages) and presentatio ssessment: German and	on of results (15 to 30		ot every semester, information on whether
	tion of				
			_		
Additic	nal inf	ormation	-		
			 Master's programme l	nformatik (Compute	r Science, 120 ECTS credits): ES.
Worklo			nactor o programme r		
300 h					
-	ng cycl	e			
		-			
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)	
Module	e appea	ars in			
		ee (1 major) Computer S	cience (2018)		
	-	ee (1 major) Computer S			
	-	ee (1 major) Computer S			
Master	's degr	ee (1 major) Computer S	cience (2025)		

Module title Abbreviation						
Practical Course - Embedded Systems 2 10-I-PES2-182-m01						
Module coordinator Module offered by						
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con			
10	numerical grade					
			Other prerequisites			
1 semester undergraduate						
Conten	ts					
Comple	etion of	a practical task.				
-		ning outcomes				
	-	allows participants to wo	rk on a problem in en	nbedded systems in	teams.	
		number of weekly contact hours,	•			
R (6)		· · · · · · · · · · · · · · · · · · ·				
module is	s creditab (10 to 1 age of a	^{le for bonus)} 5 pages) and presentatic ssessment: German and	on of results (15 to 30		ot every semester, information on whether	
Allocat						
Additio	onal inf	ormation				
			Aaster's programme l	nformatik (Compute	r Science, 120 ECTS credits): ES.	
Worklo				(,,,,,,	
300 h						
Teachi	ng cvcl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ummes)		
				······ ···)		
Module	e appea	ars in				
	••	ee (1 major) Computer So	cience (2018)			
	-	ee (1 major) Computer So				
	-	ee (1 major) Computer So				
Master	's degr	ee (1 major) Computer So	cience (2025)			

Module title Abbreviation					
Practical Course - Human Computer Interaction 1 10-I-PHCI1-182-m01					
Module coordinator Module offered					1
Dean c	of Studi	es Informatik (Compu	ter Science)	Institute of Compu	ter Science
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10		numerical grade			
			Other prerequisites		
1 semester undergraduate					
Conter	nts	<u> </u>	1		
		f a practical task.			
		ning outcomes			
			work on a problem in hu	ıman computer inte	ractions in teams.
			urs, language — if other than Ge	•	
R (6)					
^{module i} report Langua	s creditab (10 t0 1	^{ole for bonus)} 5 pages) and presenta ssessment: German a	ation of results (15 to 30		ot every semester, information on whether
	tion of				
Additio	onal inf	ormation			
			e Master's programme l	nformatik (Compute	er Science, 120 ECTS credits): HCI
Worklo			<u> </u>		
300 h					
-	ng cycl	e			
		-			
Referre	ed to in	LPO I (examination regula	tions for teaching-degree progra	ummes)	
Modul	e appea	ars in			
		ee (1 major) Computer	Science (2018)		
	-	ee (1 major) Computer			
		ee (1 major) Computer			
Master	r's degr	ee (1 major) Computer	r Science (2025)		

Module title Abbreviation						
Practical Course - Human Computer Interaction 2 10-I-PHCI2-182-mo1						
Module coordinator Module offe					ed by	
Dean o	f Studi	es Informatik (Compu	ter Science)	Institute of Comput	ter Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	numerical grade					
			Other prerequisites	sites		
1 semester undergraduate						
Conten	Its					
Comple	etion of	a practical task.				
		ning outcomes				
	-		work on a problem in hu	ıman computer inter	actions in teams.	
		· · ·	urs, language — if other than Ge	•		
R (6)						
Metho	d of ass	sessment (type, scope, lar	nguage — if other than German,	examination offered — if no	ot every semester, information on whether	
module i	s creditab	le for bonus)				
			ation of results (15 to 30	minutes)		
Langua credita		ssessment: German a	and/or English			
Allocat						
Allocal		Jaces				
Additic	nal inf	ormation				
			Mastar's programma l	nformatik (Computo	r Science, 120 ECTS credits): HCI	
Worklo				monnalik (Compute	i Science, 120 ECTS cieuris): nci	
	au					
300 h Teachi		0				
reacili	ing cycl	C				
	d to in					
Reierre		LFUI (examination regula	tions for teaching-degree progra	ammes)		
Modul			* Science (ac. 2)			
	-	ee (1 major) Compute ee (1 major) Compute				
		ee (1 major) Computer				
		ee (1 major) Compute				

Module title					Abbreviation
Selecte	ed Topi	cs of Games Engineering		10-I=AGE-182-m01	
Module	e coord	inator		Module offered by	
holder	of the (Chair of Computer Scienc	e IX	Institute of Comput	er Science
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	graduate			
Conten	ts				
Selecte	d chap	ters of Games Engineerir	ig.		
Intende	ed learı	ning outcomes			
		understand the basic app lems in this area and app			le to understand the solutions of
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) +	Ü (2)				
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf anno examin prox. 15	unced l ation o 5 minut ge of a	f one candidate each (ap es per candidate). ssessment: German and,	inning of the course, pprox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Focuse	s availa	able for students of the N	laster's programme li	nformatik (Computer	Science, 120 ECTS credits): GE.
Worklo	Workload				
150 h					
Teaching cycle					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
Master	Master's degree (1 major) Computer Science (2018)				

Module	Module title Abbreviation					
Selected Topics in Algorithms 10-I=AKA-161-m01						
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scier	ice l	Institute of Computer Science		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		_1			
Selecte	d topic	s in algorithmics.				
	·	ning outcomes				
		understand the basic ap		computer science. T	hey are able to unde	arstand the
		omplex problems in this				
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	man)		
V (2) +		-				
		Sessment (type, scope, langi	uage — if other than German, o	examination offered — if no	t every semester, informati	ion on whether
		le for bonus)			, ,	
		nation (approx. 60 to 12	-			
		by the lecturer at the be				
		of one candidate each (a tes per candidate).	approx. 20 minutes) or	an oral examination	in groups of 2 cand	idates (ap-
		ssessment: German an	d/or English			
credita			-,			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse	s availa	able for students of the	Master's programme l	nformatik (Computer	Science, 120 ECTS o	credits):
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	urs in				
Master	's degr	ee (1 major) Computer S	Science (2016)			
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Computer Science (2017)						
Master's degree (1 major) Computer Science (2018)						
	Master's degree (1 major) Computational Mathematics (2019)					
	Master's degree (1 major) Mathematics (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
		y course MINT Teacher				520)
		ee (1 major) Aerospace			_, (2020)	
	-	ee (1 major) Computer S		- /		
master's Wi	ur i majoi	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 146 / 162



Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022)

Module	Module title Abbreviation					
Selected Topics in Theory					10-I=AKT-161-m01	
Module	e coord	inator		Module offered by	_	
holder	of the (Chair of Computer Scier	nce l	Institute of Computer Science		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade		· · · · ·		
Duratio		Module level	Other prerequisites			
1 seme		graduate				
Conten		Sidduite				
		s in theory.				
		•				
		ning outcomes			11.7	
		understand the basic a complex problems in this				rstand the
Course	S (type, r	number of weekly contact hours	s, language — if other than Gei	rman)		
V (2) +	Ü (2)					
		sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
lf anno examin prox. 15	unced ation c 5 minut ge of a	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a res per candidate). ssessment: German an bonus	eginning of the course, approx. 20 minutes) or			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Focuse: AT	s availa	able for students of the	Master's programme I	nformatik (Computer	Science, 120 ECTS o	credits):
Worklo	ad					
	au					
150 h						
Teachir	ig cyci	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module appears in						
	Master's degree (1 major) Computer Science (2016)					
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) Computer Science (2018)						
Master's degree (1 major) Computational Mathematics (2019)						
Master's degree (1 major) Mathematics (2019) Master's teaching degree Cympasium MINT Teacher Education DLUS, Elite Network Pavaria (ENP) (2020)						
	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)					
		ee (1 major) Aerospace			_, (2020)	
	-	ee (1 major) Computer S	•	- /		
-						· · · · · · · · · · · · · · · · · · ·
Master's wi	th 1 majo	r Computer Science (2018)		ırg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 148 / 162



Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022)

Module title					Abbreviation
Selected Topics in Software Engineering					10-I=AKSE-161-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e ll	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	numei	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
Selecte	d topic	s in software engineering	5.		
Intende	ed learr	ning outcomes			
		bossess an advanced kno	owledge about select	ed aspects of softwa	are engineering.
		umber of weekly contact hours, l	-		
V (2) + l		,			
Method	l of ass	s essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	unced l ation o 5 minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	inning of the course, pprox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses	s availa	able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): SE.
Worklo			1 0		, ,
150 h					
Teachir	ng cycle	9			
	<u> </u>				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
	<u></u>				
Module appears in					
Master's degree (1 major) Computer Science (2016)					
	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)				
		y course MINT Teacher Ed		Network Bavaria (ENI	B) (2016)
	-	ee (1 major) Computer Sc ee (1 major) Computer Sc			
	-	ning degree Gymnasium I		on PLUS Flite Netwo	ork Bavaria (ENB) (2020)
		y course MINT Teacher Ed			
		ee (1 major) Aerospace Co			_, (,
	-	ee (1 major) Computer Sc	•	,	
	Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021)				

Module title					Abbreviation	
Selecte	Selected Topics in IT Security				10-I=AKITS-172-mo1	
Module	coord	inator		Module offered by		
holder	of the Q	Chair of Computer Scienc	e II	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	ts					
Selecte	d topic	s in IT security.				
Intende	d learr	ning outcomes				
		possess an advanced kno lems in this area and to t			e able to understand solutions to	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) + ĺ Module		t in: English				
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
examin prox. 15	ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: English			tion may be replaced by an oral in groups of 2 candidates (ap-	
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Focuses IS, LR, H			laster's programme li	nformatik (Computer	Science, 120 ECTS credits): SE,	
Workloa	ad					
150 h						
Teachin	ig cycl	9				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	-	ee (1 major) Computer Sc				
	-	ee (1 major) Computer Sc				
		ning degree Gymnasium I				
		y course MINT Teacher Ed			Б) (2020)	
mastel	Master's degree (1 major) Aerospace Computer Science (2020)					

Module title					Abbreviation	
Selecte	Selected Topics in Internet Technologies					
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scie	nce III	III Institute of Computer Science		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level Other prerequisites					
1 seme	1 semester graduate					
Conten	Its					
Selected topics in computer communication, for example design aspects of future internet structures: setup and control structures of the internet, multicast protocols, protocols for multimedia communication, optical net- works, control mechanisms for redundant and real-time communication networks, p2p networks, ad-hoc net- works, or new concepts and technologies in mobile communication: digital modulation, signal propagation, channel coding, modern transmission technologies (adaptive modulation and coding, hybrid ARQ, OFDM, MI- MO), mac layer, mobileIP, routing in ad-hoc networks, vertical handover, UMTS IP multimedia subsystem, or planning and management methods in telecommunication networks: planning methods (forward engineering, reverse engineering), network management paradigms (central and decentral), framework for network manage- ment (IETF traffic engineering, ITU-T TMN, OSI management), planning and management methods (IP manage- ment mechanisms, network design, measurement, acquisition and evaluation of traffic and performance data, visualisation, result handling, simulation and analysis of networks), management tools, outlook and perspecti- ves, or other current topics. Intended learning outcomes The students have a knowledge of advanced and current topics in the management and design of modern wired and wireless communication systems. Courses (type, number of weekly contact hours, language – if other than German) V (2) + Ü (2) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)						
If anno examir prox. 1 Langua credita	unced nation c 5 minut age of a ble for		eginning of the course, approx. 20 minutes) or			
Allocat	ion of j	Diaces				
		ormation				
		ormation	Mactor's programme	nformatik (Computer	Science the ECTE	crodite), IT
	-	able for students of the	master s programme r		Science, 120 ECIS (Licuit5); 11.
Workload						
150 h						
Teaching cycle						
Peferred to in LPO L (examination regulations for teaching degree programmer)						
	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in				
Master	's degr	ee (1 major) Computer : hing degree Gymnasiur		ion PLUS, Elite Netwo	ork Bavaria (ENB) (20	016)
Master's w	ith 1 majo	r Computer Science (2018)		urg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 152 / 162



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021)

Master's degree (1 major) Aerospace Computer Science (2021)

Module title					Abbreviation
Selecte	d Topi	cs in Intelligent Systems			10-I=AKIS-161-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Computer Science	e VI	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
Selecte	d topic	s in intelligent systems.			
Intende	ed learn	ning outcomes			
		possess an advanced kno plex problems in this are			. They are able to understand so- ns.
Courses	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)	
V (2) + ĺ	Ü (2)				
		e essment (type, scope, languag le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
examin prox. 15	ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	prox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Focuses	s availa	able for students of the M	laster's programme lr	nformatik (Computer	Science, 120 ECTS credits): IS.
Workloa	ad				
150 h					
Teachin	ng cycl	9			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
Master's degree (1 major) Computer Science (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020)					

Module title					Abbreviation
Selected Topics in Embedded Systems					10-I=AKES-161-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Compute	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5		rical grade			
Duratio		Module level	Other prerequisites		
1 semes		graduate			
Conten		3			
		s in embedded systems.			
		ning outcomes			
The stu	dents p				They are able to understand so- ns.
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + İ	Ü (2)				
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
lf annou examin prox. 15	unced l ation o ; minut ge of a	f one candidate each (ap es per candidate). ssessment: German and/	inning of the course, pprox. 20 minutes) or		tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of r	places			
Additio	nal inf	ormation			
			lastor's programmo li	aformatik (Computer	Science, 120 ECTS credits): ES.
Worklo			laster s programme n		Science, 120 ECTS creatis). ES.
	au				
150 h					
Teachir	ig cycl	8			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
	Master's degree (1 major) Computer Science (2016)				
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)					
	Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017)				
	-				
	Master's degree (1 major) Computer Science (2018) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)				
		y course MINT Teacher Ed			D) (2020)
	-	ee (1 major) Aerospace Co		20)	
	-	ee (1 major) Computer Sc		24)	
master	Master's degree (1 major) Aerospace Computer Science (2021)				

Module title					Abbreviation		
NLP and Text Mining 10-I=STM-162-mo1							
Module	e coord	inator		Module offered by			
holder of the Chair of Computer Science VI			ce VI	Institute of Comput	er Science		
ECTS Method of grading Only after succ.			Only after succ. com	compl. of module(s)			
5	nume	rical grade					
Duratio		Module level	Other prerequisites				
1 seme	ster	graduate					
Conten		3.44440					
tection stic par The stu text mi	, token rsing, w Idents ning ar	n the following areas: de isation, collocation, N-g vord sense disambiguati possess theoretical and Id language processing i nave gained experience i	ram models, morpholo on, term extraction m practical knowledge a nostly for English. The	ogy, hidden Markov ethods, information about typical method ey are able to solve p	models for tagging, extraction, sentimer Is and algorithms in problems through the	probabili- nt analysis. the area of	
Intende	ed lear	ning outcomes					
text mi	ning ar	possess theoretical and Id language processing. Ive gained experience in	They are able to solve	practical problems	with the methods ac		
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)			
V (2) +	Ü (2)						
		sessment (type, scope, langu le for bonus)	age — if other than German, e	examination offered — if no	t every semester, informati	on on whether	
lf anno examin prox. 1	unced ation c 5 minut	nation (approx. 60 to 120 by the lecturer at the be of one candidate each (a tes per candidate). ssessment: German and	ginning of the course, pprox. 20 minutes) or				
Allocat	ion of j	olaces					
Additio	nal inf	ormation	-				
Focuse IT, HCI.		able for students of the I	Master's programme li	nformatik (Computer	Science, 120 ECTS o	credits): AT,	
Worklo	ad						
150 h							
Teachi	ng cvcl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
§ 22 II Nr. 3 b)							
Module appears in							
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Information Systems (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)							
		ning degree Gymnasium r Computer Science (2018)		ION PLUS, Elite Netwo		D2O)	
master S W	iti i majo	r computer Science (2018)		rd Master (120 ECTS) Informa		page 150 / 162	



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Information Systems (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Mathematical Data Science (2025)

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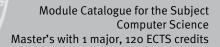
WÜRZBURG

Module title					Abbreviation	
Selecte	Selected Topics in Aerospace Engineering					
Module	e coord	inator		Module offered by		
holder	of the O	Chair of Computer Scien	ce VII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
stems, and doo tions, p cial are stems, ment, s traffic c	sensor cking, (ayload as of n space la ontrol,	is in aerospace enginee s and actuators for orie design of space ships, o ls, optical systems, RAD avigation, space enviro astronomy and planet n aw, aeroflight topics, av air traffic management	ntation control, pertur lesign of planetary bas AR, earth monitoring, nment, environment si nissions, space medici ionics for airplanes, ai	pation of orbits, inte ses, life support syst thermo managemen mulation, verificatio ne and biology, mat	rplanetary orbits, ren ems, special aspect t, structure of space m and test of space erial science, quality	ndezvous s of opera- ships, spe- faring sy- / manage-
		ning outcomes				
		possess an advanced ki e foundations in their fu			selected area and a	re able to
Course	S (type, n	umber of weekly contact hours	, language — if other than Ger	man)		
V (2) +	Ü (2)					
module is written If annou examin prox. 15 Separat	examin examin unced ation o minut te writt ge of a	Eessment (type, scope, languise for bonus) nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a res per candidate). en examination for Mas ssessment: German and	o minutes). ginning of the course, ipprox. 20 minutes) or ter's students.	the written examina	tion may be replaced	d by an oral
Allocat			_			
			_			
Additio	nal inf	ormation				
		able for students of the	Master's programme li	nformatik (Computer	Science, 120 ECTS (credits): LR.
Worklo						
150 h						
Teachir	ng cvcl	6				
	3-)	-				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Computer Science (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018)						
Master's wi	th 1 majoi	Computer Science (2018)		rg • generated 19-Apr-2025 • rd Master (120 ECTS) Informa		page 158 / 162

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Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Aerospace Computer Science (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021)





Thesis (30 ECTS credits)

Module title Abbreviation					Abbreviation
Concluding Colloquium Computer Science 10-I-MA-MK-182-mo1					
Module coordinator Module offer					
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Compu	ter Science
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites	i	
1 seme	ster	graduate			
Conten	ts				
Presen	tation	and defence of the result	s of the Master's the	sis in an open discu	ssion.
Intend	ed lear	ning outcomes			
The stu	idents	are able to present the re	sults of their Master'	s theses and defend	d them in a discussion.
Course	S (type, 1	number of weekly contact hours, I	anguage — if other than Ge	rman)	
K (o)					
		S essment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
		um (approx. 60 minutes) Issessment: German and	/or English		
Allocat			U		
Additio	onal inf	ormation			
	,				
Worklo	ad				
150 h		-			
Teachi	ng cycl	e			
	•				
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
		ee (1 major) Computer Sc	ience (2018)		

Module	Module title Abbreviation					
Master	's Thes	is Computer Science		10-I-MA-161-m01		
Module	coord	inator		Module offered by		
Dean of	fStudie	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
25	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
Indepe	ndent r	esearch and work on a to	pic of computer scie	nce that was agreed	upon with a lecturer.	
Intende	ed learı	ning outcomes				
	ls that				ice and use the knowledge and result of their work in an accepta-	
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
No cour	rses as	signed to module				
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		s (50 to 100 pages) ssessment: German and/	or English			
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Time to	compl	ete: 6 months				
Worklo	ad					
750 h						
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regulations	for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Computer Science (2016) Master's degree (1 major) Computer Science (2017) Master's degree (1 major) Computer Science (2018) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computer Science (2025)						