



Keine PO-STG-Zuordnung vorhanden Responsible: JMU Würzburg

JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record L3|079|-|-|H|2025

Abbreviations used

UNIVERSITÄT

WÜRZBURG

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:

LASPO2015

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

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

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

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The subject is divided into

Scientific Discipline (60 ECTS credits) Compulsory Courses (35 ECTS credits) 10-I-GdP-172-m01 Fundamentals of Programming 5 NUM 10-I-DB-152-m01 Databases 5 NUM 10-I-SE-252-m01 Software Engineering 5 NUM 10-I-SWP-RS-252-m01 Practical course in software (German Realschule) 10-I-SWP-RS-252-m01 Practical course in software (German Realschule) 10-I-TI-242-m01 Theory of Computation 10 NUM Compulsory Electives (25 ECTS credits) Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-m01 Algorithms and data structures 10 NUM	age
Compulsory Courses (35 ECTS credits)10-I-GdP-172-m01Fundamentals of Programming5NUM10-I-DB-152-m01Databases5NUM10-I-SE-252-m01Software Engineering5NUM10-I-SWP-RS-252-m01Practical course in software (German Realschule)10B/NB10-I-TI-242-m01Theory of Computation10NUMCompulsory Electives (25 ECTS credits)Algorithms and Data Structures (10 ECTS credits)10-I-ADS-152-m01Algorithms and data structures10NUM	
10-I-GdP-172-m01Fundamentals of Programming5NUM10-I-DB-152-m01Databases5NUM10-I-SE-252-m01Software Engineering5NUM10-I-SWP-RS-252-m01Practical course in software (German Realschule)10B/NB10-I-TI-242-m01Theory of Computation10NUMCompulsory Electives (25 ECTS credits)10-I-ADS-152-m01Algorithms and Data Structures (10 ECTS credits)10-I-ADS-152-m01Algorithms and data structures1010-I-ADS-152-m01Algorithms and Data Structures (10 ECTS credits)	
10-I-DB-152-mo1Databases5NUM10-I-SE-252-mo1Software Engineering5NUM10-I-SWP-RS-252-mo1Practical course in software (German Realschule)10B/NB10-I-TI-242-mo1Theory of Computation10NUMCompulsory Electives (25 ECTS credits)Algorithms and Data Structures (10 ECTS credits)10-I-ADS-152-mo1Algorithms and data structures10NUM	24
10-I-SE-252-mo1 Software Engineering 5 NUM 10-I-SWP-RS-252-mo1 Practical course in software (German Realschule) 10 B/NB 10-I-TI-242-mo1 Theory of Computation 10 NUM Compulsory Electives (25 ECTS credits) Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-mo1 Algorithms and data structures 10 NUM	13
10-I-SWP-RS-252-mo1 Practical course in software (German Realschule) 10 B/NB 10-I-TI-242-mo1 Theory of Computation 10 NUM Compulsory Electives (25 ECTS credits) Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-mo1 Algorithms and data structures 10 NUM	43
10-I-TI-242-mo1 Theory of Computation 10 NUM Compulsory Electives (25 ECTS credits) Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-mo1 Algorithms and data structures 10 NUM 10 NUM 10 NUM	46
Compulsory Electives (25 ECTS credits) Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-mo1 Algorithms and data structures 10 NUM 10-LCADS 152-mo1 Algorithms and Data Structures out One Course 10 NUM	47
Algorithms and Data Structures (10 ECTS credits) 10-I-ADS-152-mo1 Algorithms and data structures 10 NUM 10-I-CADS-152-mo1 Algorithms and Data Structures 10 NUM	17
10-I-ADS-152-mo1 Algorithms and data structures 10 NUM 10-LCADS 152-mo1 Algorithms and Data Structures Louis One Course 10 NUM	
to L CADE are more. Algorithms and Date Structures Louis One Course	6
1 10 I NUM I	23
Programming Practical Courses (10 ECTS credits)	
10-I-PP-191-mo1 Practical Course in Programming 10 B/NB	38
10-I-EPP-152-mo1 Introductory Programming Course 10 B/NB	22
General Compulsory Electives (5 ECTS credits)	
10-I-RAK-152-mo1 Computer Architecture 5 NUM	39
10-I-LOG-152-mo1 Logic for informatics 5 NUM	35
10-I-AGT-152-mo1 Algorithmic Graph Theory 5 NUM	8
10-I-SEC-191-mo1 IT Security 5 NUM	44
10-I-ICG-152-mo1 Interactive Computer Graphics 5 NUM	27
10-I-APR-172-mo1 Advanced Programming 5 NUM	10
10-I-KT-191-mo1 Computational Complexity 5 NUM	33
10-I-KD-191-mo1 Cryptography and Data Security 5 NUM	30
10-I-BS-242-mo1 Operating Systems 5 NUM	12
10-I-MSE-252-mo1 Model-based Systems Engineering 5 NUM	37
10-I-KI-252-m01 Artificial Intelligence 5 NUM	32
10-I-IuE-212-mo1 Computer Science and Ethics 5 NUM	29
10-I=AKII-232-mo1 Selected Topics in Computer Science 5 NUM	5
Teaching (12 ECTS credits)	
Compulsory Courses (12 ECTS credits)	
Computer Science Education 1 (incl. Practical Course in the Ap-	
10-I-DDI1-152-mo1 plication of Computer Science Systems form an Educational 6 NUM	15
Point of View)	
10 L DDIa RS 152 mot Computer Science Education 2 (incl. Seminar in Computer	16
Science Education at the German Realschule)	10
Paper (4 ECTS credits) Students studying for a teaching degree Realschule must complete a practical training in didactics and teaching methodo (studienbegleitendes fachdidaktisches Praktikum) which refers to one of the subjects they selected as vertieft studiertes (subject studied with a focus on the scientific discipline) pursuant to Section 34 Subsection 1 No. 4 LPO I (examination re- lations for teaching-degree programmes). The obligatory accompanying tutorial is offered by the respective subject. The E credits obtained are counted in the subject Erziehungswissenschaften pursuant to Section 10 Subsection 3 LASPO (gener academic and examination regulations for teaching-degree programms).	ology Fach gu- ECTS ral
10-I-SBFD-RS-152-mo1 Practical Training in Classroom Teaching in Computer Science 4 B/NB	42
Freier Bereich (general as well as subject-specific electives)	
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Teaching degree students must take modules worth a total of 15 ECTS credits in the area Freier Bereich (general as well as subject-specific electives) (Section 9 LASPO (general academic and examination regulations for teaching-degree programmes)). To achieve the required number of ECTS credits, students may take any modules from the areas below. Freier Bereich -- interdisciplinary: The interdisciplinary additional offer for a teaching degree can be found in the respective An-

nex "Ergänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt".	
Computer Science	

(Freier Bereich (general as well as subject-specific electives) subject specific)					
10-I-REP-152-m01	Exam Tutorial for the German Staatsexamen	4	B/NB	41	
10-l-DS-152-m01	Seminar Computer Science Education	4	NUM	20	
10-I-DV-152-m01	Advanced Topics of Computer Science Education	4	B/NB	21	
10-I-DRO-152-m01	Robotics in Education (practical course)	4	B/NB	19	
10-I-DPR-152-m01	Practical Course on Computer Science Education	4	B/NB	18	
10-I-DPP-152-m01	Hands-on Computer Science	6	B/NB	17	
10-I-TUT1-152-m01	Tutor activity 1	2	B/NB	48	
10-I-TUT2-152-m01	Tutor activity 2	2	B/NB	49	

Paper (10 ECTS credits)

Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students studying for a teaching degree Realschule may write this thesis in one of the subjects they selected as Unterrichtsfach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.

10-I-HA-RS-152-m01	Thesis Computer Science (Teaching Degree at the German Re- alschule)	10	NUM	26
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Module title Abb			Abbreviation			
Selected Topics in Computer Science			10-I=AKII-232-m01			
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Selecte	ed topic	cs in computer science.				
Intende	ed lear	ning outcomes				
The stu them to	idents a o relate	are able to understand th d questions.	e solutions to comple	ex problems in comp	outer science and to transfer	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V (2) +	Ü/S (2)					
Methoo ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
b) proje the top c) oral (d) oral Langua credita	 b) project work (report (approx. 20 pages) with presentation (30 to 45 minutes) and subsequent discussion on the topic) or c) oral examination of one candidate each (approx. 20 minutes) or d) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus 					
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cvcl	e				
Teachir	ng cycle	e: if announced				
Referre	ed to in	LPO I (examination regu	lations for teaching-d	legree programmes)		
§ 22 Nr. 3 b)						
Module appears in						
Module Master Master Master Master Supple Master	e studie 's degr 's degr 's degr 's degr 's teacl mentai	es (Master) Computer Scie ee (1 major) Computer Sc ee (1 major) Aerospace Co ee (1 major) Artificial Inte ee (1 major) Artificial Inte hing degree Gymnasium I ry course MINT Teacher Eo ee (1 major) Computer Sc	ence (2019) ience (2023) omputer Science (202 Iligence & Extended F Iligence (2024) WINT Teacher Educati ducation PLUS, Elite N ience (2025)	23) Reality (2024) on PLUS, Elite Netwo Network Bavaria (EN)	ork Bavaria (ENB) (2025) B) (2025)	

Modul	e title			Abbreviation	
Algorit	Algorithms and data structures 10-I-ADS-152-mo1				
Module coordinator Module offered by					
Dean o	of Studies Informatik (Compute	er Science)	Institute of Comput	er Science	
ECTS	Method of grading	Only after succ. con	npl. of module(s)		
10	numerical grade				
Duratio	on Module level	Other prerequisites			
1 seme	ester undergraduate				
Conter	its				
Design ta type	and analysis of algorithms, re s, lists, trees, graphs, basic gr	ecursion vs. iteration, s aph algorithms, progra	ort and search meth mming in Java.	ods, data structures,	, abstract da-
Intend	ed learning outcomes				
Studer know t are abl	nts are proficient in independe he basic paradigms for the de le to estimate the runtime beh	ntly designing, precise sign of algorithms and avior of algorithms anc	ly describing and an can implement them I prove the correctne	alyzing algorithms. T 1 in practical progran ss of algorithms.	The students ns. Students
Course	s (type, number of weekly con	tact hours, language –	- if other than Germa	n)	
V (4) +	Ü (2)				
Metho ster, in	d of assessment (type, scope, formation on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
If anno examir prox. 1 credita	bunced by the lecturer at the bo nation of one candidate each (5 minutes per candidate). ble for bonus	eginning of the course, approx. 20 minutes) or	the written examina an oral examination	tion may be replaced in groups of 2 cand	d by an oral idates (ap-
7111000					
Additic	nal information				
Auun					
Worklo					
300 h					
Teachi	ng cycle				
Teachi	ng cycle: only in winter semes	ter			
Referre	ed to in LPO I (examination reg	gulations for teaching-	degree programmes)		
§ 49 1 § 69 1	Nr. 1 a) Nr. 1 a)				
Modul	e appears in				
Modul Bachel	e appears in lor's degree (1 major) Compute	er Science (2015)			
Bachelor's degree (1 major) Mathematics (2015)					
Bachelor's degree (1 major) Economathematics (2015) Bachelor's degree (1 major) Human Computer Systems (2015)					
Bachelor's degree (1 major) fruinair-computer Systems (2015) Bachelor's degree (1 major) Computational Mathematics (2015)					
Bachelor's degree (1 major) Aerospace Computer Science (2015)					
First state examination for the teaching degree Realschule Computer Science (2015)					
First state examination for the teaching degree Gymnasium Computer Science (2015)					
Bachelor's degree (1 major) Aerospace Computer Science (2017)					
Bachel	or's degree (1 major) Compute	er Science (2017)			
ыаспе	or s degree (1 major) Compute	er Science (2019)			
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Bachelor's degree (1 major) Aerospace Computer Science (2020) Bachelor's degree (1 major) Computer Science und Sustainability (2021) Bachelor's degree (1 major) Mathematics (2023)

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Module title Abbrev			Abbreviation			
Algorithmic Graph Theory 10-I-AGT-152-m01						
Module coordinator Module offered by						
holder	of the (Chair of Computer Scie	nce l	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites	5		
1 seme	ester	undergraduate				
Conter	nts					
We dis colour of grap progra	cuss ty ings, wo oh prob ms or h	pical graph problems: ' ork with planar graphs ems, we also become ow we show that they a	We solve round trip pro and find out how the ra familiar with new conco are fixed parameter cor	oblems, calculate ma anking algorithm of G epts, for example ho nputable.	ximal flows, find ma loogle works. Using w we model problem	itchings and the examples is as linear
Intend	ed lear	ning outcomes				
The stu cipant course	udents a s are ab s, stude	are able to model typic le to decide which too nts learn in detail how	al problems in comput l from the course helps to estimate the run tim	er science as graph p solve a given graph e of given graph algo	problems. In addition problem algorithmic prithms.	n, the parti- cally. In this
Course	es (type	, number of weekly cor	itact hours, language –	– if other than Germa	ın)	
V (2) +	Ü (2)					
Metho ster, ir	d of ass Iformati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina 1 a bonus)	tion offered — if not	every seme-
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						
Alloca	tion of j	DIACES				
Additional information						
workie	bad					
150 h						
Teachi	ng cycl	е				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 22 II Nr. 3 b)						
Module appears in						
Bachelor's degree (1 major) Computer Science (2015) Bachelor's degree (1 major) Mathematics (2015)						
Bachelor's degree (1 major) Mathematics (2015) Bachelor's degree (1 major) Computational Mathematics (2015)						
Bachelor's degree (1 major) Aerospace Computer Science (2015)						
First st	ate exa	mination for the teachi	ng degree Gymnasium	Computer Science (2	2015)	
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)						
Bache	lor's de	gree (1 major) Compute	er Science (2017)	/		
			. //			,
LA Realsch	ulen Com	outer Science (2025)	JMU Würzbur data record I	g • generated 19-Apr-2025 • e Lehramt Realschulen Informat	exam. reg. .ik - 2025	page 8 / 49

Bachelor's degree (1 major) Computer Science (2019) Module studies (Bachelor) Computer Science (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) Bachelor's degree (1 major) Aerospace Computer Science (2020) 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) Bachelor's degree (1 major) Artificial Intelligence and Data Science (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) Bachelor's degree (1 major) Games Engineering (2025)

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Module	Module title Abbreviation					
Advanced Programming 10-I-APR-172-m01						
Module coordinator		Module offered by				
holder	of the C	hair of Computer Scier	nce II	Institute of Comput	er Science	
ECTS	Metho	d of grading	Only after succ. con	npl. of module(s)		
5	numer	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
With th grams. and coo de a se cussed	e know If more de dupl nsible s	ledge of basic program complex problems are icates occur. In this lec structure. Also, further	ming, taught in introd to be tackled, subopt ture, further knowledg topics in the areas of s	uctory lectures, it is p imal results like long ge is to be conveyed o coftware security and	oossible to realize si , incomprehensible on how to give progr parallel programmi	mpler pro- functions ams and co- ng are dis-
Intende	ed learr	ing outcomes				
Studen then im allel pr sing.	its learn iplemei ocessin	advanced programmin nted in multiple langua g concepts are introdu	ng paradigms especial ges and their efficienc ced culminating in the	ly suited for space ap y measured using sta use of GPU architect	oplications. Different andard metrics. In ac cures for extremely q	t patterns are Idition, par- uick proces-
Course	s (type,	number of weekly con	tact hours, language –	- if other than Germa	n)	
V (2) +	Ü (2)					
Methoo ster, in	d of ass formati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
If anno examin prox. 19 Langua credita	examir unced b ation o 5 minut ge of a ble for l	fation (approx. 60 to 12 by the lecturer at the be f one candidate each (a es per candidate). ssessment: German an bonus	d/or English	the written examina an oral examination	tion may be replaced in groups of 2 cand	d by an oral idates (ap-
Allocat	ion of p	laces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachi	ng cycle	9				
Referre	ed to in	LPOI (examination reg	gulations for teaching-	degree programmes)		
§ 22	Nr. 3 b)					
Module	e appea	rs in				
Bachel	or's deg	gree (1 major) Compute	r Science (2017)			
Bachelor's degree (1 major) Computer Science (2019)						
Module	e studie	s (Bachelor) Computer	Science (2019)			
Master	's degre	ee (1 major) Nanostruct	ure Technology (2020)	l .		
Master	's degre	ee (1 major) Physics (20)20) MINIT Tooch ar Educat		whe Dougerie (END) (-	
waster	steach	ing degree Gymnasiun	I WIINT TEACHER Educat	IUN PLUS, EIITE NETWO	JIK BAVARIA (ENB) (20	J20J
	montar		Education Direction	Notwork Davaria (EN	\mathbf{R}	
Bachel	mentar or's deg	y course MINT Teacher gree (1 maior) Business	Education PLUS, Elite	Network Bavaria (EN (2020)	B) (2020)	

Master's degree (1 major) Physics International (2020) Master's degree (1 major) Quantum Engineering (2020) Bachelor's degree (1 major) Computer Science und Sustainability (2021) Master's degree (1 major) Quantum Technology (2021) Bachelor's degree (1 major) Business Information Systems (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) Business Information Systems (2023) Master's degree (1 major) Quantum Engineering (2024) Master's degree (1 major) Physics International (2024) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) Bachelor's degree (1 major) Digital Business & Data Science (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) Bachelor's degree (1 major) Games Engineering (2025)

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Module title Abbreviation				Abbreviation	
Operatii	Operating Systems 10-I-BS-242-m01				10-l-BS-242-m01
Module	coordi	nator		Module offered by	
holder o	of the C	hair of Computer Scienc	e II	Institute of Comput	er Science
ECTS	Metho	d of grading	Only after succ. com	pl. of module(s)	
5	numer	ical grade			
Duration	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Content	s				
Introduc sing in c ry mana	ction to operati Igemen	o computer systems, devo ng systems, processes a t, device and file manag	elopment of operatin nd threads, CPU sche ement, operating sys	g systems, architect eduling, synchronisa tem virtualisation.	ure principles, interrupt proces- tion and communication, memo-
Intende	d learn	ing outcomes			
The stuc	dents p	ossess knowledge and p	practical skills in buil	ding and using esse	ntial parts of operating systems.
Courses	s (type,	number of weekly conta	ct hours, language —	if other than Germa	in)
V (2) + Ü	Ĵ (2)				
Method ster, info	of ass ormatio	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
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			
Addition	nal info	ormation			
Workload					
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 3 b), § 69 Nr. 1 c)					
Module appears in					
Bachelo	or's deg	gree (1 major) Business Ir	nformation Systems (2024)	
Bachelo	or's deg	ree (1 major) Games Eng	ineering (2025)		

Module title			Abbreviation		
Databa	Databases 10-I-DB-152-m01				
Module coordinator Module offered by					
Dean of Studies Informatik (Computer Science) Institute of Compu			Institute of Comput	er Science	
ECTS	Method of grading	Only after succ. cor	npl. of module(s)		
5	numerical grade				
Duratio	on Module level	Other prerequisites	5		
1 seme	ester undergraduate				
Conter	Contents				
Relatio ment.	nal algebra and complex SQL	statements; database	planning and norma	l forms; transaction	manage-
Intend	ed learning outcomes				
The sti	idents possess knowledge ab	 out database modellin	g and queries in SOL	as well as transaction	ons
Course	(typo, number of wookly cor	tact hours language -	- if other than Corma		5115.
Course			- II OLIIEI LIIAII GEIIIIA	iii <i>)</i>	
V (2) +	U (2)				
Metho ster, in	d of assessment (type, scope, formation on whether module	language — if other th can be chosen to earr	an German, examina 1 a bonus)	tion offered — if not	every seme-
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					d by an oral idates (ap-
Allocat	tion of places				
Additio	onal information				
Worklo	ad				
150 h					
Toochi	ng qualo				
Teacin					
 Referre	ed to in LPO I (examination re	gulations for teaching-	degree programmes)		
§4911	Nr. 1 b)	<u> </u>			
§ 69 1	Nr. 1 b)				
Modul	e appears in				
Bachel	or's degree (1 major) Compute	r Science (2015)			
Bachel	or's degree (1 major) Mathem	atics (2015)			
Bachelor's degree (1 major) Business Information Systems (2015)					
Bachelor's degree (1 major) Computational Mathematics (2015)					
Bachelor's degree (1 major) Aerospace Computer Science (2015)					
Bachelor's degree (1 major) Functional Materials (2015)					
First state examination for the teaching degree Realschule Computer Science (2015)					
First state examination for the teaching degree Gymnasium Computer Science (2015)					
Master's degree (1 major) Physics (2016)					
Bachelor's degree (1 major) Business Information Systems (2016)					
Bachel	or's degree (1 major) Aerospa	ce Computer Science (2017)		
Bachel	or's degree (1 major) Compute	r Science (2017)			
LA Realsch	ulen Computer Science (2025)	JMU Würzbur data record I	g • generated 19-Apr-2025 • e Lehramt Realschulen Informat	xam. reg. ik - 2025	page 13 / 49

Bachelor's degree (1 major) Computer Science (2019) Bachelor's degree (1 major) Business Information Systems (2019) Bachelor's degree (1 major) Business Information Systems (2020) Bachelor's degree (1 major) Aerospace Computer Science (2020) Bachelor's degree (1 major) Functional Materials (2021) Bachelor's degree (1 major) Computer Science und Sustainability (2021) Bachelor's degree (1 major) Business Information Systems (2021) Bachelor's degree (1 major) Mathematical Data Science (2022) 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) Bachelor's degree (1 major) Business Information Systems (2023) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) Bachelor's degree (1 major) Functional Materials (2025) Bachelor's degree (1 major) Games Engineering (2025)

LA Realschulen Computer Science (2025)		JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 14 / 49
		data record Lehramt Realschulen Informatik - 2025	

Module title			Abbreviation		
Computer Science Education 1 (incl. Practical Course in the Application of			Application of	10-I-DDI1-152-m01	
Comput	ter Scie	ence Systems form an Ed	ucational Point of Vi	ew)	
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)	
6	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
2 seme	ster	undergraduate	-		
Conten	ts				
The mo practica	dule gi al appli	ves an overview of comp cation in the classroom.	uter science didactic	s. It demonstrates a	nd discusses possibilities for a
Intende	ed learr	ning outcomes			
Student and me topics. well as ses.	ts are f dia for Studen guideli	amiliar (in particular in th teaching topics in compo its are familiar with both ines and standards for te	ne area of computer s uter science. They are historical and curren aching computer scie	cience in <i>Sekundars</i> a able to didactically t teaching approach ence. They are able t	<i>stufe I</i>) with methods, techniques analyse and prepare practical es, typical teaching methods as o plan, organise and deliver clas-
Courses	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	in)
V (2) + ĺ	Ü (2) +	P (2)	, , , , , , , , , , , , , , , , , , , ,		
Method ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
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).					
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Workload					
180 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 49 Nr. 2 § 69 Nr. 2					
Module	appea	irs in			
First sta	ate exa	mination for the teaching	degree Realschule C	Computer Science (2	015)
First sta	ate exa	mination for the teaching	g degree Gymnasium	Computer Science (2	2015)

Module	title				Abbreviation
Computer Science Education 2 (incl. Seminar in Computer Science Education			10-l-DDl2-RS-152-m01		
at the German Realschule)					
Module	e coord	inator		Module offered by	
Dean of	f Studie	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	ipl. of module(s)	
0 Duratia	nume	Madula laval	 Other prevenuisites		
1 seme	o n ster	undergraduate	Other prerequisites		
Conton	te	undergraduate			
This con ses pos topics i classro	urse di ssibiliti n comp om.	scusses different topics i es for a practical applicat outer science didactics fo	n computer science c tion in the classroom or <i>Realschule</i> includin	lidactics in more de . The seminar supple g, in particular, rele	tail. It demonstrates and discus- ementing the course focuses on vant practical skills for use in the
Intende	ed leari	ning outcomes			
The students are able to plan, execute and assess projects, are familiar with important aspects of the planning and analysis of computer science classes, master fundamental teaching and learning strategies and are able to assess these. The students are able to handle the special problems of their subject in <i>Realschule</i> and know how to apply selected computer science systems in practice.					
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	in)
V (2) +	Ü (2) +	S (2)			
Methoo ster, inf	l of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
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).					
Allocat	ion of p	olaces			
Additional information					
Workload					
180 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 49 Nr. 2					
Module	e appea	irs in			
First sta	ate exa	mination for the teaching	g degree Realschule C	Computer Science (2	015)

Module title				Abbreviation	
Hands-on Computer Science			10-I-DPP-152-m01		
Module coordinator				Module offered by	
Dean of	f Studio	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
2 seme	ster	undergraduate			
Conten	ts				
Design and implementation of a school project on a topic in computer science, e. g. for project days, school term papers (<i>Facharbeiten</i>), <i>Pluskurse</i> (additional courses for the in-depth study of areas of special interest), work-shops. In the theoretical phase, the students formulate the subject-specific and didactic requirements of the topic, search for a suitable topic, elaborate this topic for the project and draw up a project plan. This is done in groups with students providing each other with advice as well as challenging and reflecting on each other's work. In the practical phase, the students prepare the implementation of the project, implement the project with					
Intende	ed lear	ning outcomes	0 1		
The students are able to select a topic from the area of computer science that is suitable for a school project and are able to elaborate it. They are familiar with different aspects of project planning and management and are able to critically reflect the process.					
Ü (a)	s (type)	, number of weekly conta	ct nours, taliguage –		
Method ster, inf	i of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
practica Assess	al assig ment o	gnment (preparing and de ffered: Only in the semes	elivering a school lab ter in which the cours	session) with exami se is offered	ination talk (approx. 15 minutes)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Workload					
180 h					
Teaching cycle					
Teaching cycle: Usually every 2 years					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 2 f) § 22 Nr. 3 f)					
Module	appea	ars in			
First sta First sta	ate exa ate exa	mination for the teaching mination for the teaching	g degree Realschule C g degree Gymnasium	Computer Science (2 Computer Science (2	015) 2015)

Module title			Abbreviation		
Practical Course on Computer Science Education			10-I-DPR-152-m01		
Module	e coord	inator		Module offered by	<u> </u>
Dean o	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
4	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Discuss aspects science	sion of s, in pa e didac	problems in programmin rticular subject-specific f tics as well as possible a	g in the computer sci oundations, didactic pproaches in the clas	ence classroom that analyses, the conte ssroom.	t takes into account different mporary debate in computer
Intende	ed lear	ning outcomes			
The stu classro	dents om, ta	are able to discuss centra king into account subject	ll topics and question -specific, didactic an	ns of programming ir d methodical aspect	n the computer science ts.
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	in)
Ü (2)	-				
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)					
practica Assess	al assig ment o	nment with examination ffered: Only in the semes	talk (approx. 15 minu ter in which the cour	utes) se is offered	
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
120 h					
Teaching cycle					
Teaching cycle: Usually every 2 years					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 2 f)					
8 22 II NI. 3 I) Module appears in					
First sta	ate exa	mination for the teaching	r degree Realschule (omputer Science (2)	015)
First sta	ate exa	mination for the teaching	degree Gymnasium	Computer Science (2	2015)
This state examination for the reaching degree symmastam compared science (2013)					

no-i-DRO-152-mo1 Module offered by Dean of Studies Informatik (Computer Science) Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites Institute of Computer Science Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Additional information				
Module coordinator Module offered by Dean of Studies Informatik (Computer Science) Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Û (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places				
Dean of Studies Informatik (Computer Science) Institute of Computer Science ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ú (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intende learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ú (2) Uther module can be chosen to earn a bonus) Practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places				
4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents Contents subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ú (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
DurationModule levelOther prerequisites1 semesterundergraduateContentsDiscussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science di- dactics as well as possible approaches in the classroom.Intended learning outcomesThe students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects.Courses (type, number of weekly contact hours, language — if other than German)Ü (2)Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offeredAllocation of placesAdditional information				
1 semester undergraduate Contents Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
Contents Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science didactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
Discussion of problems in robotics in the computer science classroom that takes into account different aspects, in particular subject-specific foundations, didactic analyses, the contemporary debate in computer science di- dactics as well as possible approaches in the classroom. Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, ta- king into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
Intended learning outcomes The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
The students are able to discuss central topics and questions of robotics in the computer science classroom, taking into account subject-specific, didactic and methodical aspects. Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
Courses (type, number of weekly contact hours, language — if other than German) Ü (2) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
 Ü (2) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information 				
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
practical assignment (supervision of a group of pupils) with examination talk (approx. 15 minutes) Assessment offered: Only in the semester in which the course is offered Allocation of places Additional information				
Allocation of places Additional information				
 Additional information				
Additional information				
Workload				
120 h				
Teaching cycle				
Teaching cycle: Usually every 2 years				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
§ 22 Nr. 2 f) § 22 Nr. 3 f)				
Module appears in				
First state examination for the teaching degree Realschule Computer Science (2015) First state examination for the teaching degree Gymnasium Computer Science (2015)				

Module title			Abbreviation		
Semina	ar Comj	outer Science Education			10-l-DS-152-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
4	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Selecte	d topic	s in computer science di	dactics.		
Intende	ed lear	ning outcomes			
The stu selves subject	idents g with an t. They	gain initial experience in Id structure a given topic, are also able to actively p	the area of independ , using selected litera participate in a scient	ent scientific work. T ture, as well as to p ific discussion.	hey are able to acquaint them- repare a talk on the respective
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
S (2)					
Methoo ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
written pic fror Assess	elabor n the fi ment o	ation (approx. 20 pages) eld of computer science of ffered: Only in the semes	and presentation inc didactics .ter in which the cour:	luding discussion (a se is offered	approx. 45 to 60 minutes) on a to-
Allocat	ion of p	olaces			
Additional information					
Workload					
120 h					
Teaching cycle					
Teaching cycle: usually once a year					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 2 f) § 22 Nr. 3 f)					
Module appears in					
First sta	ate exa	mination for the teaching	g degree Realschule C	omputer Science (2	015)
First sta	First state examination for the teaching degree Gymnasium Computer Science (2015)				

Module title			Abbreviation	
Advanced Topics of Computer Science Education 10-I-DV-152-m01			10-l-DV-152-m01	
Module coordinator		Module offered by		
Dean of Studies Informatik (Compute	r Science)	Institute of Comput	er Science	
ECTS Method of grading	Only after succ. con	npl. of module(s)		
4 (not) successfully completed				
Duration Module level	Other prerequisites			
1 semester undergraduate				
Contents				
Discussion of topics in teaching com particular subject-specific foundatior tics as well as possible approaches in	outer science in <i>Gymn</i> is, didactic analyses, t n the classroom.	<i>asium</i> that takes into he contemporary de	account different aspects, in bate in computer science didac-	
Intended learning outcomes				
The students are able to discuss cent into account subject-specific, didacti	ral topics and issues of and methodical aspe	on teaching compute ects.	r science in a <i>Gymnasium</i> , taking	
Courses (type, number of weekly con	tact hours, language –	- if other than Germa	n)	
S (2)				
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)				
talk (approx. 30 minutes) or practical Assessment offered: Only in the sem	assignment (exercise) ester in which the cour	with examination ta se is offered	lk (approx. 15 minutes)	
Allocation of places				
Additional information				
Workload				
120 h				
Teaching cycle				
Teaching cycle: Usually every 2 years				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
§ 22 Nr. 2 f) § 22 Nr. 2 f), § 22 Nr. 3 f)				
Module appears in				
First state examination for the teachin First state examination for the teachin	ng degree Realschule (ng degree Gymnasium	Computer Science (2 Computer Science (2	015) 2015)	

Module title			Abbreviation		
Introductory Programming Course			10-I-EPP-152-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)	
10	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
The pro implem	gramm ented	iing language used is Jav independently.	a. In the practical cou	irse, small to middle	e-sized java programs are to be
Intende	ed lear	ning outcomes			
The stu	dents a	are able to independently	/ develop and implem	nent small to middle	sized Java programs.
Courses	s (type	, number of weekly conta	ct hours, language –	if other than Germa	n)
P (6)					
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)				tion offered — if not every seme-	
practical examination (programming exercises, approx. 240 hours) and 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-					
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 49 Nr. 1 c)					
Module appears in					
Bachelor's degree (1 major) Business Information Systems (2015) First state examination for the teaching degree Realschule Computer Science (2015) Bachelor's degree (1 major) Business Information Systems (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2018) Bachelor's degree (1 major) Business Information Systems (2019)					

Module title				Abbreviation		
Algorit	hms an	d Data Structures Leve	l One Course	-	10-I-GADS-152-m01	
Module	e coord	inator		Module offered by		
Dean o	fStudie	es Informatik (Compute	r Science)	Institute of Comput	er Science	
ECTS	Metho	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					
Design ta type	and an s, lists,	alysis of algorithms, re trees, graphs, basic gra	cursion vs. iteration, s aph algorithms, progra	ort and search methe Imming in Java.	ods, data structures,	abstract da-
Intend	ed learr	ning outcomes				
The students are able to independently design algorithms as well as to precisely describe and analyse them. The students are familiar with the basic paradigms of the design of algorithms and are able to apply them in practical programs. The students are able to estimate the run-time behaviour of algorithms and to prove their correctness.						
Course	s (type	, number of weekly cont	tact hours, language –	- if other than Germa	n)	
V (4) +	Ü (3)					
Metho ster, in	d of ass formati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
written or oral credita	examir examin ble for	nation (approx. 60 to 12 ation in groups of 2 car bonus	o minutes) or oral exa ndidates (approx. 15 m	mination of one can inutes per candidate	didate each (approx. e)	20 minutes)
Allocat	ion of p	olaces				
Additio	onal info	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	a				
Teachin	15 0900	-				
				۱		
Referre		LPOT (examination reg	ulations for teaching-	uegree programmes)		
§4911	vr. 1 a)					
Module	e appea	rs in				
Bachelor's degree (1 major, 1 minor) Digital Humanities (Minor, 2015) Bachelor's degree (2 majors) Digital Humanities (2015) First state examination for the teaching degree Realschule Computer Science (2015) Bachelor's degree (1 major) Business Information Systems (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2016) Bachelor's degree (1 major, 1 minor) Digital Humanities (2018) Bachelor's degree (1 major, 1 minor) Digital Humanities (2018) Bachelor's degree (2 majors) Digital Humanities (2018) Bachelor's degree (1 major) Business Information Systems (2019) Bachelor's degree (1 major) Business Information Systems (2020) Bachelor's degree (1 major) Business Information Systems (2020) Bachelor's degree (1 major) Business Information Systems (2021) Bachelor's degree (1 major) Business Information Systems (2023) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Digital Business & Data Science (2024)						
LA Realsch	ulen Comp	outer Science (2025)	JMU Würzburg data_record L	g • generated 19-Apr-2025 • e ehramt Realschulen Informat	xam. reg. ik - 2025	page 23 / 49

Modul	e title	Abbreviation			
Fundamentals of Programming 10-I-GdP-172-m01					
Modul	e coordinator		Module offered by		
holdor	of the Chair of Computer Scie	ncoll	Institute of Comput	or Science	
FCTS	Nothed of grading		nstitute of Comput		
5 Durati					
	on Module level	Other prerequisites	•		
Conter					
Data ty	nes control structures found	ations of procedural p	rogramming selected	topics of C introdu	uction to ob-
ject or	ientation in Java, selected topi	cs of C++, further Java	concepts, digression	: scripting language	S.
Intend	ed learning outcomes				
The stu	udents possess a fundamenta	l knowledge about prog	gramming languages	(in particular Java, (C and C++)
and ar	e able to independently devel	op average to high leve	l Java programs.		
Course	es (type, number of weekly cor	itact hours, language –	- if other than Germa	ın)	
V (2) +	Ü (2)				
Metho	d of assessment (type, scope,	language — if other th	an German, examina	tion offered — if not	every seme-
ster, in	formation on whether module	can be chosen to earn	a bonus)		
writter	examination (approx. 60 to 1	20 minutes).			
If anno	ounced by the lecturer at the b	eginning of the course,	the written examina	tion may be replace	d by an oral
examin	nation of one candidate each (approx. 20 minutes) of	r an oral examination	i in groups of 2 cand	idates (ap-
credita	ble for bonus				
Allocat	tion of places				
Additi	onal information				
Workle					
150 h					
Teachi	ng cycle				
Teacin					
 Doforr	ad to in IDO L (ovamination ro	gulations for toaching	dograa programmac)		
Kelein			degree programmes)		
9 49 1 § 60	Nr. 1 b) Nr. 1 b)				
Modul	e appears in				
Bache	lor's degree (1 major) Physics	(2015)			
Bache	lor's degree (1 major) Aerospa	ce Computer Science (2	2017)		
Bache	lor's degree (1 major) Compute	er Science (2017)			
Bache	lor's degree (1 major) Compute	er Science (2019)			
Bachelor's degree (1 major) Business Information Systems (2020)					
Bachelor's degree (1 major) Physics (2020)					
Bachelor's degree (1 major) Aerospace Computer Science (2020)					
Bachelor's degree (1 major) Computer Science und Sustainability (2021)					
Bachelor's degree (1 major) Business Information Systems (2021)					
Bachelor's degree (1 major) Mathematical Data Science (2022)					
Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022)					
Bache	lor's degree (1 major) Artificial	Intelligence and Data S	Science (2023)		
LA Realsch	nulen Computer Science (2025)	JMU Würzbur data record I	g • generated 19-Apr-2025 • e .ehramt Realschulen Informat	xam. reg. ik - 2025	page 24 / 49

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Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Business Information Systems (2023) Bachelor's degree (1 major) Business Information Systems (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) Bachelor's degree (1 major) Economathematics (2025)

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Module title					Abbreviation	
Thesis	Compu	ter Science (Teaching De	egree at the German I	Realschule)	10-I-HA-RS-152-m01	
Module	e coord	inator		Module offered by	·	
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	ter Science	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
		undergraduate				
Conten	ts					
Resear time fra	ching a ame an	nd writing on a defined p d adhering to the princip	problem in computer les of good scientific	science or computer practice.	science didactics within a given	
Intende	ed lear	ning outcomes				
The stu practice	idents a e.	are able to research and	write on a defined pro	oblem, adhering to t	he principles of good scientific	
Course	s (type	, number of weekly conta	ct hours, language —	- if other than Germa	an)	
No cou	rses as	signed to module				
Method ster, in	d of ass formati	essment (type, scope, la on on whether module ca	inguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
Hausar to 300 Langua ons for	beit (th hours) ige of a teachi	esis) pursuant to Section ssessment: German; exc ng-degree programmes)	n 29 LPO I (examinati eptions pursuant to S	on regulations for te Section 29 Subsectio	aching-degree programmes) (250 on 4 LPO I (examination regulati-	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 29						
Module	Module appears in					
First sta	First state examination for the teaching degree Realschule Computer Science (2015)					

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Module title				Abbreviation		
Interactive Computer Graphics 10-I-ICG-152-m01						
Modul	e 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. con	npl. of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
Compu- cificall conten about jection line wi Accom or Dire Intend	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/ or DirectX.					
At the compu	end of t ter grap graphic	he course, the students bhics. They will be able s applications and to ch	will have a broad und to implement a promin poose the right softwa	lerstanding of the un nent variety of these re tool for this task	derlying theoretical models, to build the	models of ir own inter-
Course	s (type	number of weekly cont	act hours language -	- if other than Germa	n)	
V(2) +	<u>іі (з)</u>			n other than oerna		
V (2) +					tion offered if not	
ster, in	formati	on on whether module	can be chosen to earn	a bonus)	tion offered — if not	every seme-
written If anno examir prox. 1 Langua credita	examin ounced nation o 5 minut age of a ble for	nation (approx. 60 to 12 by the lecturer at the be of one candidate each (a res per candidate). ssessment: German and bonus	o minutes). ginning of the course, approx. 20 minutes) or d/or English	the written examina an oral examination	tion may be replaced in groups of 2 cand	d by an oral idates (ap-
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Workle	ad					
150 h						
Toochi	ng cycl	•				
Referre		LPUT (examination reg		legree programmes)		
mourie appears III						
FIRST State examination for the teaching degree Gymnasium Computer Science (2015) Master's teaching degree Gymnasium MINT Teacher Education DLUS, Elite Network, Pavaria (ENP) (2016)						
Supplementary course MINT Teacher Education PLUS Flite Network Ravaria (ENR) (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)						
Bachel	or's de	gree (1 major) Computer	r Science und Sustaina	ahility (2021)		
LA Realsch	ulen Comp	outer Science (2025)	JMU Würzburg	• generated 19-Apr-2025 • e	xam. reg.	page 27 / 49
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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)

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Module title Abbreviation					Abbreviation
Compu	Computer Science and Ethics 10-I-IuE-212-mo1				
Module	e coord	inator		Module offered by	
holder	of the (Chair of Computer Scienc	e III	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
The cor comput nisms o	ntent of ter scie or algoi	the module focuses on t nce (e.g. in implementati ithms, in the operation o	he connection betwe ion) and also technic f systems or network	en ethics and comp al possibilities (e.g. s).	uter science, implications for in the design of software, mecha-
Intende	ed lear	ning outcomes			
The ain module on ethi	n of the e, stude cal con	module is the scientific ents have a basic awaren flict cases.	discourse on ethical ess of computer scier	problems in comput nce based on hypoth	er science. After completing the netical but realistic case studies
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	in)
V/S (2)					
Methoo ster, in	d of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writt b) term Langua	en exa paper ge of a	nination (approx. 60 to 1 (10 to 15 pages) and pres ssessment: German and,	20 minutes) or sentation (30 to 45 m /or English	inutes) with subsequ	uent discussion
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Teaching cycle: every year, winter semester					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 3 b)					
Module appears in					
Bachel	or's de	gree (1 major) Computer 9	Science und Sustaina	bility (2021)	
				-, (=-=-)	

Module title					Abbreviation		
Cryptography and Data Security 10-I-KD-191-m01							
Modul	e coordi	nator		Module offered by	Nodule offered by		
Dean c	of Studie	es Informatik (Compute	er Science)	Institute of Computer Science			
ECTS	Metho	d of grading	Only after succ. cor	npl. of module(s)			
5	numer	ical grade					
Durati	on	Module level	Other prerequisites	i			
1 seme	ester	undergraduate					
Conter	nts						
Private RSA, D million	Private key cryptography systems, Vernam one-time pad, AES, perfect security, public key cryptography systems, RSA, Diffie-Hellman, Elgamal, Goldwasser-Micali, digital signature, challenge-response methods, secret sharing, millionaire problem, secure circuit evaluation, homomorphous encryption.						
Intend	ed learr	ing outcomes					
The stu stems, wasse evalua	The students possess a fundamental and applicable knowledge in the areas of private key cryptography sy- stems, Vernam one-time pad, AES, perfect security, public key cryptography, RSA, Diffie-Hellman, Elgamal, Gold- wasser-Micali, digital signature, challenge-response method, secret sharing, millionaire problem, secure circuit evaluation, homomorphous encryption						
Course	es (type,	number of weekly cor	itact hours, language –	- if other than Germa	in)		
V (2) +	Ü (2)						
Metho ster, in	d of ass nformati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	ition offered — if not	: every seme-	
prox. 1 Langua Assess credita	5 minut age of a sment of able for l	es per candidate). ssessment: German ar ffered: In the semester conus	nd/or English in which the course is	offered and in the su	ubsequent semester	-	
Alloca	tion of p	laces					
Additio	onal info	ormation					
Worklo	oad						
150 h							
Teachi	ing cycle	9					
Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)			
§ 22	Nr. 3 b)						
Module appears in							
Bachelor's degree (1 major) Computer Science (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) Bachelor's degree (1 major) Computer Science und Sustainability (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) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024)							
				20.24)			
LA Realsch	nulen Comp	uter Science (2025)	JMU Würzbur data record I	g • generated 19-Apr-2025 • e ehramt Realschulen Informat	exam. reg. tik - 2025	page 30 / 49	

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) Bachelor's degree (1 major) Games Engineering (2025)

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	data record Lehramt Realschulen Informatik - 2025	

Module title					Abbreviation	
Artificia	al Intel	ligence			10-l-Kl-252-m01	
Module	e coord	inator		Module offered by		
				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					
Conten	ts					
Intende	ed learı	ning outcomes				
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V (2) + Module	Ü (2) e taugh	t in: German and/or Engl	ish			
Method	d of ass	essment (type, scope, la	nguage — if other tha	an German, examina	tion offered — if not every seme-	
ster, in	formati	on on whether module ca	an be chosen to earn	a bonus)		
written	exami	nation (approx. 60 to 120	minutes) or			
If anno	unced l	by the lecturer at the beg	inning of the course,	the written examina	tion may be replaced by an oral	
prox. 1	s minut	es per candidate).	prox. 20 minutes) or		in groups of 2 candidates (ap-	
Langua	ige of a	ssessment: German and,	or English/			
credita	ble for	bonus				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 22	§ 22 II Nr. 3 b)					
§ 69 Nr. 1 b)						
Module	e appea	irs in				
keinem	keinem Studiengang zugeordnet					

Module title				Abbreviation		
Computational Complexity 10-I-KT-191-m01						
Modul	e coord	inator		Module offered by	<u> </u>	
Dean	of Studi	es Informatik (Compute	ar Science)			
FCTS	Meth	od of grading	Only after succ. con	nnl of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conte	nts		I			
Compl sumpt thods,	Complexity measurements and classes, general relationships between space and time classes, memory con- sumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation me- thods, P-NP problem, completeness problems, Turing reduction, interactive proof systems.					
Intend	led lear	ning outcomes				
The st classe detern proble	The students possess a fundamental and applicable knowledge in the areas of complexity measurements and classes, general relationships between space and time classes, memory consumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation methods, P-NP problem, completeness problems, Turing reduction, interactive proof systems.					
Course	es (type	, number of weekly cor	ntact hours, language –	- if other than Germa	ın)	
V (2) +	· Ü (2)					
Metho ster, ir	d of ass nformati	sessment (type, scope, ion on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
exami prox. 1 Langu Assess credita	nation of 15 minut age of a sment o able for	of one candidate each (tes per candidate). ssessment: German ar ffered: In the semester bonus	approx. 20 minutes) or nd/or English r in which the course is	r an oral examination offered and in the su	i in groups of 2 cand ubsequent semester	lidates (ap-
Alloca		Diaces	<u>.</u>			
Additi	onal Inf	ormation				
 Workl	oad					
150 h	Jau					
Teach	ing cycl	9				
	ing cyci					
Referr	ed to in	IPOL (examination re	gulations for teaching.	degree programmes)		
δ 22 II	Nr 3 h)		Sulutions for teaching			
Modul	e annea	ars in				
Bache	lor's de	gree (1 major) Compute	er Science (2010)			
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) Bachelor's degree (1 major) Computer Science und Sustainability (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)						
Bache	lor's de	gree (1 major) Artificial	Intelligence and Data S	Science (2024)		
LA Realsc	hulen Com	outer Science (2025)	– JMU Würzburg data record I	g • generated 19-Apr-2025 • e ehramt Realschulen Informat	xam. reg. ik - 2025	page 33 / 49

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) Bachelor's degree (1 major) Games Engineering (2025)

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Module title				Abbreviation		
Logic	Logic for informatics 10-I-LOG-152-m01					
Madula securinator						
Modul				Module offered by		
Dean o	of Studie	es Informatik (Compute	r Science)	Institute of Comput	er Science	
ECIS	metho	od of grading	Only after succ. con	npl. of module(s)		
5 Durati	Inume					
	on	module level	Other prerequisites			
Conte	nts	undergraduate				
Syntax	and se	mantics of proposition	al logic equivalence a	nd normal forms. Ho	rn formulas SAT reg	solution infi-
nite fo	rmula s	ets, syntax and semant	ics of predicate logic.	na normat ronnis, no	in formulas, <i>5</i> /(1, fet	
Intend	ed lear	ning outcomes				
The st	udents a	are proficient in the foll	owing areas: syntax ar	nd semantics of prop	ositional logic, equi	valence and
norma	l forms,	Horn formulas, SAT, re	solution, infinite formu	ula sets, syntax and s	semantics of predica	ite logic.
Course	es (type	, number of weekly con	tact hours, language –	- if other than Germa	ın)	
V (2) +	Ü (2)					
Metho	d of ass	sessment (type, scope,	language — if other th	an German, examina	tion offered — if not	every seme-
ster, ir	ofrmati	on on whether module	can be chosen to earn	a bonus)		
writter	ı examiı	nation (approx. 60 to 12	20 minutes).			d h
exami	nation c	by the lecturer at the be	eginning of the course,	the written examination	tion may be replace	a by an oral idates (ap-
prox. 1	5 minut	es per candidate).	approx. 20 minutes) of		i ili gioups oi 2 callu	luates (ap-
Langu	age of a	ssessment: German an	d/or English			
credita	able for	bonus				
Alloca	tion of p	olaces				
Additi	onal inf	ormation				
Workle	oad					
150 h						
Teachi	ing cycl	e				
Referr	ed to in	LPO I (examination reg	ulations for teaching-	degree programmes)		
§ 22	Nr. 3 b)					
Modul	e appea	irs in				
Bache	lor's de	gree (1 major) Compute	r Science (2015)			
Bache	lor's de	gree (1 major) Mathema	atics (2015)			
Bache	lor's de	gree (1 major) Computa	tional Mathematics (2	015)		
First st	ate exa	mination for the teachi	ng degree Gymnasium	Computer Science (2	2015)	
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)						
Bachelor's degree (1 major) Computer Science (2017)						
Bachelor's degree (1 major) Computer Science (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)						
Bache	Bachelor's degree (1 major) Aerospace Computer Science (2020)					
Bache	lor's de	gree (1 major) Compute	r Science und Sustaina	ability (2021)		
LA Realsch	nulen Comp	outer Science (2025)	JMU Würzburg data record L	g • generated 19-Apr-2025 • e ehramt Realschulen Informat	exam. reg. ik - 2025	page 35 / 49

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Bachelor's degree (1 major) Mathematics (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) Bachelor's degree (1 major) Games Engineering (2025)

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Module title				Abbreviation	
Model-	based	Systems Engineering			10-l-MSE-252-m01
Module	e coord	inator		Module offered by	·
				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				
Conten	ts				
Intende	ed learı	ning outcomes			
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	in)
V (2) +	Ü (2)				
Methoo ster, in	d of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
If anno examin prox. 19 credita	examin unced nation o 5 minut ble for	nation (approx. 60 to 120 by the lecturer at the beg f one candidate each (ap es per candidate). bonus	minutes). inning of the course, oprox. 20 minutes) or	the written examina an oral examination	tion may be replaced by an oral 1 in groups of 2 candidates (ap-
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 II Nr. 3 b)					
Module	e appea	irs in			
Bachel	or's de	gree (1 major) Games Eng	gineering (2025)		

Module title			Abbreviation		
Practical Course in Programming			10-I-PP-191-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)	
10	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
		undergraduate	Intended learning ou	utcomes of the follow	wing module are required: 10-I-
			GdP. It is therefore s	trongly recommende	ed to complete this before.
Conten	ts				
The pro	gramm	ning language Java. Indep	endent creation of sr	nall to middle-sized	, high-quality Java programs.
Intende	ed learr	ning outcomes			
The stu	dents a	are able to independently	v develop small to mi	ddle-sized, high-qua	ality Java programs.
Courses	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)
P (6)					
Method ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
minutes If annou examin prox. 15	s) unced l ation o 5 minut	by the lecturer at the beg of one candidate each (ap les per candidate).	inning of the course, pprox. 20 minutes) or	the written examina an oral examination	tion may be replaced by an oral in groups of 2 candidates (ap-
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
300 h					
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
§491N §691N	lr. 1 c) lr. 1 d)				
Module appears in					
Bachelo	or's de	gree (1 major) Computer 9	Science (2019)		
Module	Module studies (Bachelor) Computer Science (2019)				
Bachold	stuale	es (bachelor) Orientierung	Computer Science (2	020)	
Bachelo	or's deg	gree (1 major) Aerospace	Science und Sustaina	ubility (2021)	
Bachelo	or's deg	gree (1 major) Mathemati	cs (2023)	·····, ()	

Module title				Abbreviation		
Compu	Computer Architecture 10-I-RAK-152-mo1					
Modul	e coord	inator		Module offered by		
Dean c	of Studie	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	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
Instruc ling, ca	tion set aches, v	architectures, comma ector processors, mult	nd processing through i-core processors.	pipelining, statical a	and dynamic instruct	tion schedu-
Intend	ed learr	ning outcomes				
The stu compil	udents r ers and	naster the most import operating systems.	ant techniques to desi	gn fast computers as	s well as their intera	ction with
Course	s (type	number of weekly con	tact hours, language –	- if other than Germa	n)	
V (2) +	Ü (2)					
Metho	d of ass	essment (type, scope,	language — if other th	an German, examina	tion offered — if not	everv seme-
ster, in	formati	on on whether module	can be chosen to earn	a bonus)		
written If anno	examir	1ation (approx. 60 to 12 by the lecturer at the b	20 minutes).	the written examina	tion may be replaced	d by an oral
examir	nation o	f one candidate each (approx. 20 minutes) or	an oral examination	in groups of 2 cand	idates (ap-
prox. 1	5 minut	es per candidate).			0	
Langua	age of a	ssessment: German an	d/or English			
credita	ble for	bonus				
Allocat	tion of p	olaces				
Additio	onal info	ormation				
Worklo	oad					
150 h						
Teachi	ng cycl	9				
Referre	ed to in	LPOI (examination reg	gulations for teaching-	degree programmes)		
§22	Nr. $3 b$	Dachnararchitaktur				
8 69 11	VI. 1 ():					
Modul	e appea	rs in				
Bachel	or's deg	gree (1 major) Compute	r Science (2015)			
Bachel	or's deg	gree (1 major) Mathema	tional Mathematics (a)	015)		
Bachelor's degree (1 major) Computational Mathematics (2015) Bachelor's degree (1 major) Aerospace Computer Science (2015)						
First state examination for the teaching degree Gymnasium Computer Science (2015)						
Master's degree (1 major) Physics (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Bachelor's degree (1 major) Aerospace Computer Science (2017)						
Bachelor's degree (1 major) Computer Science (2017)						
Bachelor's degree (1 major) Computer Science (2019)						
Master	's degre	ee (1 major) Physics (20)20)			
LA Realsch	ulen Comp	outer Science (2025)	JMU Würzburg data record L	g • generated 19-Apr-2025 • e ehramt Realschulen Informat	xam. reg. ik - 2025	page 39 / 49

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) Bachelor's degree (1 major) Aerospace Computer Science (2020) Bachelor's degree (1 major) Computer Science und Sustainability (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) Master's degree (1 major) Physics International (2024) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Bachelor's degree (1 major) Games Engineering (2025)

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Module title				Abbreviation	
Exam T	Exam Tutorial for the German Staatsexamen			10-I-REP-152-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)	
4	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
2 seme	ster	undergraduate			
Conten	ts				
Revisio	n of co	ntents of modules coveri	ng the subject as wel	l as the subject dida	ectics of computer science.
Intende	ed leari	ning outcomes			
The stun nation.	dents l	nave refreshed their skills	s for the solution of th	ne type of problems	asked in the written state exami-
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
Ü (2)					
Method ster, inf	l of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
One exe	ercise p	per area covered in the st	ate examination		
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
120 h					
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
§ 22 N	vr. 2 f)				
§ 22 N	vr. 3 b)				
Module appears in					
First sta	te exa	mination for the teaching	degree Realschule C	Computer Science (20	015)
riss state examination for the teaching degree symnasium Computer Science (2015)					
Supplei	Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)				
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 (EN	B) (2020)
Master'	s teacl	ning degree Gymnasium I	WINT Teacher Educati	on PLUS, Elite Netwo	ork Bavaria (ENB) (2025)
Supple	mentar	y course MINT Teacher Eo	ducation PLUS, Elite N	Network Bavaria (EN	B) (2025)

Module	title				Abbreviation
Practica	Practical Training in Classroom Teaching in Computer Science Education inclu-				
ding Th	eory (C	German Realschule)			
Module	e coord	inator		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)	
4	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
The mo	dule in	troduces students to the	classroom practice o	f their <i>Unterrichtsfa</i>	ch (subject studied with a focus
on the s	scientif	ic discipline). Using spee	ific teaching models	, examples and proje	ects in different grades, the mo-
dule int	troduce	es students to subject-sp	ecific techniques. In t	the university course	e accompanying the placement,
explore	ts refle	onal subject-specific and	didactic aspects. In	this context, the cou	their teaching placements and use discusses selected practi-
cal asp	ects of	teaching computer scien	ce in accordance wit	h applicable guideli	nes and curricula. The course fo-
cuses c	on rece	nt developments in class	room practice, also ta	aking into account a	spects of school pedagogy and
learnin	g psycł	nology that can support t	he successful practic	al implementation o	f subject-specific conceptual de-
signs.					
Intende	ed leari	ning outcomes			
The stu	dents a	are familiar with the most	important component	nts of planning and o	organising classes. They are ab-
le to tea	ach the	to connect ideas from sol	ent grades as well as i	to critically reflect re	cent developments in education.
didacti	cs and	to incorporate these into	their teaching.	anning psychology v	with their expension in the area of
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
P (o) + 2	S (2)				
Method	d of ass	essment (type, scope, la	nguage — if other tha	an German, examina	tion offered — if not every seme-
ster, in	formati	on on whether module ca	an be chosen to earn	a bonus)	
Written	elabor	ration of teaching practic	e (15 to 20 pages)		
Conten	ts and	duration of placement as	specified in Section	34 Subsection 1 Ser	ntence 1 No. 4 LPO I (examination
tasks a	s sneci	fied by placement schoo	l filles); participation	in manualory leach	ing practice, completion of all set
Allocat	ion of r	places			
	<u></u>				
Additio	nal inf	ormation			
Worklo	ad				
120 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 34 1 Nr. 4					
Module appears in					
First sta	First state examination for the teaching degree Realschule Educational Science (2015)				

LA	Realschulen	Computer	Science	(2025)	
-^	RealSchulen	computer	Julence	(2025)	

Module title					Abbreviation
Software Engineering					10-l-SE-252-m01
Module	e coord	inator		Module offered by	
				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				
Conten	ts				
Intende	ed lear	ning outcomes			
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
V (2) +	Ü (2)				
Methoo ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
written If anno examin prox. 19 credita	examin unced nation c 5 minut ble for	nation (approx. 60 to 120 by the lecturer at the beg of one candidate each (ap res per candidate). bonus	minutes). inning of the course, oprox. 20 minutes) or	the written examina an oral examination	tion may be replaced by an oral in groups of 2 candidates (ap-
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 49 Nr. 1 b) § 69 Nr. 1 b)					
Module appears in					
Bachel	or's de	gree (1 major) Economath	nematics (2025)		
Bachel	Bachelor's degree (1 major) Games Engineering (2025)				

Module title					Abbreviation	
IT Secu	IT Security 10-I-SEC-191-m01					
Module	e coord	inator		Module offered by		
holder	of the C	Chair of Computer Scier	nce II	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
The cou The cou (I) M S Tru P C	 The course provides a broad sweep through concepts and technologies related to IT security: Theoretical aspects: information-theoretic security, computational security, introduction to cryptography (historical and modern ciphers, hash functions, pseudo-random generators, message authentication codes, public key cryptography) Network security: protocol security, security of TCP/IP, public key infrastructure, user authentication Software security: Software vulnerabilities, common programming errors and exploitation techniques, reverse engineering and obfuscation, malware and anti-malware Platform security: access control models, security policies, operating system security, virtualization, se- 					
Intende	ed learr	ning outcomes				
Studen and an going to exercis	ts will b alyze se o under es prov	be introduced to the ma ecurity of a system criti rstand the purpose and ide some hands-on ex	ain concepts and abstr cally from the attacker I function of several se perience of security flo	actions of IT security view point. After visi curity technologies, ws in software.	r. They learn how to r iting the lecture stud as well as their limita	nodel threats ents are ations. The
Course	s (type	number of weekly con	tact hours, language –	- if other than Germa	n)	
V(2) +	<u>ii (2)</u>	number of weekly con				
Module	e taught	t in: German and/or En	glish			
Method	d of ass formati	essment (type, scope,	language — if other the	an German, examina	tion offered — if not	every seme-
written If anno examin prox. 19 Langua credita	examir unced l ation o 5 minut ge of a ble for	nation (approx. 60 to 12 by the lecturer at the be f one candidate each (es per candidate). ssessment: German an bonus	20 minutes). eginning of the course, approx. 20 minutes) or d/or English	the written examina an oral examination	tion may be replaced in groups of 2 cand	d by an oral idates (ap-
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachi	ng cycle	9				
Referred to in LPO L (examination regulations for teaching-degree programmes)						
Module appears in						
moutle appears in Pachalar's dagrae (a major) Computer Science (2010)						
Module studies (Bachelor) Computer Science (2019)						
Bachel	or's deg	gree (1 major) Compute	r Science und Sustaina	ability (2021)		
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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) Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024) Bachelor's degree (1 major) Games Engineering (2025)

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Module title				Abbreviation		
Practical course in software (German Realschule)			10-l-SWP-RS-252-m01			
Module coordinator		Module offered by				
Dean of Studies Informatik (Computer Science)		Science)	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	(not) s	successfully completed	10-I-SE and either 10	o-I-PP or 10-I-EPP		
Duratio	on	Module level	Other prerequisites	Other prerequisites		
1 seme	ster	undergraduate	In addition, the knowledge and skills acquired in modul		quired in module 10-I-ADS and/	
			or 10-l-GADS are req	uired. Prior attendar	nce of these modules is therefore	
			highly recommende	d.		
Conten	ts		<u>-</u>			
Comple cation tion an	etion of of solu d deliv	^a a project assignment in tion components (e. g. Ul ery of the runnable softw	groups, problem ana ML) and milestones, u are product in a collo	lysis, creation of req user manual, progra quium.	uirements specifications, specifi- mming documentation, presenta-	
Intende	ed lear	ning outcomes				
The stu small to	idents eams.	possess the practical ski	lls for the design, dev	velopment and exect	ition of a software project in	
Course	s (type	, number of weekly conta	ict hours, language —	if other than Germa	n)	
P (6)						
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)						
practical project (Completion of a larger software project in groups (approx. 300 hours per person) and final pre- sentation (approx. 10 minutes per group)						
Allocation of places						
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 49 l Nr. 1 c)						
Module appears in						
keinem Studiengang zugeordnet						

Module title			Abbreviation		
Theory of Computation					10-l-Tl-242-m01
Module coordinator		Module offered by			
Dean of Studies Informatik (Computer Science)		Science)	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	undergraduate			
Conten	ts			1	
Compu	conte	, decidability, countabilit	ty, finite automata, re omplexity of calculat	gular sets, generativ ions P-NP problem	/e grammars, context-free lan- NP completeness
Intende	d loar	ning outcomes		ions, i -ini problem,	in completeness.
The stu	donte	accoss a fundamental a	nd applicable knowle	day in the grade of	computability decidability coup
tability,	, finite xity of	automata, regular sets, g	enerative grammars, lem. NP completenes	context-free languages.	ges, context-sensitive languages,
Course	s (type	number of weekly conta	ct hours, language —	if other than Germa	n)
V (4) +	Ü (2)	, <u> </u>			
Method ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
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).					
Allocati	ion of r	places			
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teachir	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 49 Nr. 1 a) § 69 Nr. 1 a)					
Module	appea	ars in			
Module studies (Bachelor) Orientierungsstudien (2020) Bachelor's degree (1 major) Artificial Intelligence and Data Science (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) Bachelor's degree (1 major) Games Engineering (2025)					

Module title			Abbreviation		
Tutor activity 1			10-I-TUT1-152-m01		
Module coordinator Module offered by					
Deep of Studies Informatik (Computer Science)		Institute of Computer Science			
ECTS	Metho	od of grading	Only after succ. com	initiate of comparison	
2	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
		undergraduate			
Conten	ts				
Tutorin	g activi	ties in the area of compu	iter science.		
Intende	ed leari	ning outcomes			
Imparti	ng kno	wledge and skills to stud	ents of computer scie	ence.	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)
T (2)					
Method	l of ass	essment (type, scope, la	nguage — if other tha	an German, examina	tion offered — if not every seme-
ster, in	formati	on on whether module ca	an be chosen to earn	a bonus)	
Wrap-u	p repoi	t on tutoring activities (5	to 10 pages)		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
60 h					
Teachir	ng cycl	e			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
§ 22	Nr. 2 f)				
§ 22 II Nr. 3 f)					
Module appears in					
Bachelor's degree (1 major) Computer Science (2015)					
First state examination for the teaching degree Realschule Computer Science (2015)					
First state examination for the teaching degree Gymnasium Computer Science (2015)					
Bachel	Bachelor's degree (1 major) Computer Science (2017)				
Bachel		gree (1 major) Computer S	Science (2019)	hility (and t)	
Bachel	יר s מפּיָ גיי איי	gree (1 major) Computer S	Science und Sustaina	$\frac{1}{2021}$	
	Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022)				
Bachel	Sachelor's degree (1 major) Artificial Intelligence and Data Science (2023) Rachelor's degree (1 major) Artificial Intelligence and Data Science (2023)				
Bachelor's degree (1 major) Artificial Intelligence and Data Science (2024)					

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Module title			Abbreviation		
Tutor activity 2			10-I-TUT2-152-m01		
Module coordinator Mod			Module offered by		
Dean of Studies Informatik (Computer Science)		Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
2	(not) s	successfully completed		E	
Duratio	n	Module level	Other prerequisites		
		undergraduate			
Conten	ts				
Tutoring	g activi	ties in the area of compu	iter science.		
Intende	ed learı	ning outcomes			
Imparti	ng kno	wledge and skills to stud	ents of computer scie	ence.	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)
T (2)					
Method	l of ass	essment (type, scope, la	nguage — if other tha	an German, examina	tion offered — if not every seme-
Wran-u		t on tutoring activitios (r			
			to to pages)		
Allocal		naces			
Additional information					
WORKIO	ad				
60 h					
Teachir	ng cycl	9			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
§ 22 N	Nr. 2 f)				
§ 22 II Nr. 3 t)					
Module appears in					
Bachelor's degree (1 major) Computer Science (2015)					
First state examination for the teaching degree Realschule Computer Science (2015)					
rist state examination for the teaching degree Gymnasium Computer Science (2015)					
Bachol	Dachelor's degree (1 major) Computer Science (2017)				
Bachel	nr's de	gree (1 major) Computer (Science (2019)	hility (2021)	
Bachel	nr's de	pree (1 major) Artificial In	telligence and Data S	Science (2022)	
Bachel	Bachelor's degree (1 major) Artificial Intelligence and Data Science (2022)				
Bachelo	Bachelor's degree (1 major) Artificial Intelligence and Data Science (2023)				

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