

Module Catalogue

for the Subject

Aerospace Computer Science

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

> Examination regulations version: 2011 Responsible: Institute of Computer Science

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Module Catalogue for the Subject Aerospace Computer Science Bachelor's with 1 major, 180 ECTS credits

Excursion Space- and Aerospace



The subject is divided into

section / sub-section	ECTS credits	starting page
Thesis	12	7
Compulsory Courses	129	9
Aerospace	34	10
Computer Science	56	17
Mathematics	20	25
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Content and Objectives of the Programme

The Bachelor of Science in aerospace computer science combining theoretical and practical elements is the first degree level offered by the Department of Mathematics and Computer Science at the Julius Maximilian University of Würzburg.

The aim of this degree is to teach students the most important aspects of computer science, to understand the theory of algorithms and their application, to improve analytical skills, the ability to think in abstract terms and to structure complex problems as well as basic skills and scientific aspects from aerospace technology, mathematics, physics, and astronomy.

This bachelor program focuses on:

- 1. Well established and fundamental knowledge of facts and methods as well as on the development of thought processes necessary for computer science,
- 2. basic skills to understand, develop and program avionic systems for aerospace applications and 3. basic knowledge about aerospace operations and orbit mechanics.

This programme covers the theoretical aspects as well as enough practical experience by concept building, constructing and programming such systems.

Abbreviations used

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

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

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

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASP02009

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

09-Nov-2011 (2011-123)

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.



Thesis (12 ECTS credits)

Modul	Module title Abbreviation					
Bachel	Bachelor Thesis Space- and Aerospace Computer Science10-I-LRI-BA-092-m01					
Module	e coord	linator		Module offered by	/	
Dean o	of Studi	es Informatik (Comput	ter Science)	Institute of Comp	uter Science	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
12	nume	rical grade				
Duratio	on	Module level	Other prerequisites	5		
1 seme	ster	undergraduate				
Conten	Its					
		and writing on a define to the principles of go		e information techn	ology within a given time frame	
Intend	ed lear	ning outcomes				
		are able to research aı les of good scientific p		oblem in aerospace	e information technology, adhering	
Course	S (type,	number of weekly contact hou	ırs, language — if other than Ge	rman)		
C (no ii	nforma	tion on SWS (weekly c	ontact hours) and cours	se language availab	le)	
		sessment (type, scope, lar ble for bonus)	nguage — if other than German,	examination offered — if	not every semester, information on whether	
written Langua		assessment: German o	r English			
Allocat	ion of	places				
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appe	ars in				
	-		ce Computer Science (2 ce Computer Science (2	•		



Compulsory Courses

(129 ECTS credits)



Aerospace

(34 ECTS credits)

Module title				Abbreviation	
Introdu	Introduction to Aerospace Systems				10-I-ELR-092-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science
ECTS	ECTS Method of grading Only after succ. com		npl. of module(s)		
6	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 semesterundergraduateBy way of exception, additional prerequisites are listed in assessments.			isites are listed in the section on		
Conten	ts				
History	of spa	ce flight, carrier rockets,	orbits of spacecraft, e	environment condition	ons in space, special aspects of

History of space flight, carrier rockets, orbits of spacecraft, environment conditions in space, special aspects of space applications, foundations of subsystems of spacecraft. Introduction to aviation systems, physical foundations of aircraft aerodynamics, flight stability, airplane technology and structure of aircraft, foundations of aviation propulsion and suitable material.

Intended learning outcomes

The students possess the theoretical and practical knowledge necessary to correctly classify aerospace systems, correctly identify the most important system relationships, formulate requirements for new systems and do calculations for selected basic system elements.

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

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 10-I-ELR-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-I-ELR-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

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

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 10-I-ELR-1-092: Introduction to Aerospace Systems 1 Introduction to Aerospace Systems 1

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes)
- Other prerequisites: Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).

Assessment in module component 10-I-ELR-2-092: Introduction to Aerospace Systems 2 Introduction to Aerospace Systems 2

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes)
- Other prerequisites: Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).

Allocation of places

--

Bachelor's with 1 major Aerospace Computer
Science (2011)

Additional information

Workload

--

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011)

Module title					Abbreviation
Operations of Aerospace Systems			10-I-LRBE-092-m01		
Module coordinator				Module offered by	
holder	of the (Chair of Computer Scienc	e VII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
9	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Admission prerequise announced by the le		exercises (type and scope to be ing of the course).
Conten	ts				
control	centre	s, communication metho	ds and systems, tran	smission path balan	les, ground station, structure of ice, transmission and operating nd telecommando systems.
Intende	ed lear	ning outcomes			
system: new sys	s in air stems a	and space vehicles, ider	ntify the most importa	ant system relations	ectly classify systems to operate hips, formulate requirements for ments for the operation of air and
Course	5 (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	io infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat aminati tion of o	te, the ion in g one ca	written examination can groups. A 80 to 90 minute	be replaced by an ora e written examination	al examination of on is equivalent to a 2	four weeks prior to the examina- e candidate each or an oral ex- o minute (approx.) oral examina- 2 and a 40 minute (approx.) oral
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	Bachelor' degree (1 major) Aerospace Computer Science (2009)				
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2011)				

Dynamics of everytator In-I-LRDN-092-m01 Module correctivator Module of grading Only after succ. compl. of module(s) ECTS Mether of grading Only after succ. compl. of module(s) Gongariantic grade - Duration Module level Other prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). Content: Foundations of orbital dynamics and orientation dynamics of air and space vehicles, spherical trigonometry, two-body poblem, identification of classical orbit elements from initial conditions, identification of orbit and orientation systems in air and space travel. Skills to apply the acquired knowledge in development and analysis of orbit and orientation systems in air and space travel. Skills to apply the acquired knowledge in development and analysis of orbit and orientation systems. Courses: travel. Skills to apply the acquired knowledge in development and analysis of orbit and orientation systems in air and space travel. Skills to apply the acquired knowledge in development and analysis of orbit and orientation distation systems. Courses: travel. Skills to apply the acquired knowledge in development and analysis of orbit and orientation of actastical robit degree (andigate each or an oral examination ingrove, so to 6 om mutes); if announced by the lecturer by four weeks prior to the examination data. Module to	Module title				Abbreviation	
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Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Aerospace Computer Science (2009)	Additio	nal inf	ormation			
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Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Bachelor' degree (1 major) Aerospace Computer Science (2009)						
 Module appears in Bachelor' degree (1 major) Aerospace Computer Science (2009)	Teaching cycle					
 Module appears in Bachelor' degree (1 major) Aerospace Computer Science (2009)						
Bachelor' degree (1 major) Aerospace Computer Science (2009)	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Bachelor' degree (1 major) Aerospace Computer Science (2009)						
		-			•	

Module title				Abbreviation	
On board data processing			10-I-BDV-092-m01		
Module	e coord	inator		Module offered by	
holder	of the (Chair of Computer Scienc	e VIII	Institute of Comput	er Science
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme:	ster	undergraduate	Admission prerequis announced by the le		exercises (type and scope to be ing of the course).
Conten	ts				
on into prograr	hardw nming,	are and software tasks, s	ystem architecture, to	opologies, reliable s	es to other subsystems, divisi- ystems, fault tolerance, real-time ns, implementing of example ap-
Intende	ed learı	ning outcomes			
	tions a	nd dependencies with ar			ented. They understand the to implement and control such
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat aminati tion of	te, the ion in g one cai	written examination can roups. A 80 to 90 minute	be replaced by an ora written examination	al examination of on is equivalent to a 20	four weeks prior to the examina- e candidate each or an oral ex- o minute (approx.) oral examina- 2 and a 40 minute (approx.) oral
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2009)				
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2011)				

Module title				Abbreviation	
Measurement Technique				10-I-LMT-111-m01	
Module	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	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Admission prerequise announced by the le		exercises (type and scope to be ing of the course).
Contents					
measur ment, re and stra ques fo lar acce frequer ment re	rement esistar ay capa or: pres eleratio ncy and ecordin	uncertainty, measureme ice measurement (effecti acitance, noise effects, d sure, length, angle, temp n, measurement amplifie I time measurement, disp	nt of electric values, ve resistance and rea ynamic behaviour of erature, sensors for c er, measurement sign play of time dependen n inertial sensors, acc	voltage and current in actance), measureme electrical systems, s optical measurement hal processing, AD-co nce of electrical sign celeration sensors, re	y, error kinds, error propagation, measurement, power measure- ent bridge, influence of ground ensors and measurement techni- ts, force and acceleration, angu- onverter, digital measurements, als, computer-aided measure- otation (gyroscope), Coriolis an-
Intende	ed leari	ning outcomes			
The stu and aut			of measurement for	aerospace systems a	and for applications in robotics
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat	te, the		be replaced by an ora	al examination of on	four weeks prior to the examina- e candidate each or an oral ex- groups of 3: 25 minutes)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					



Computer Science (56 ECTS credits)

Module t	title			Abbreviation	
Algorith	Algorithms and Data Structures for students of Space- and Aerospace Compu-				
ter Scien	ice				
Module	coordinator		Module offered by		
Dean of s	Studies Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS I	Method of grading	Only after succ. con	npl. of module(s)		
10 r	numerical grade				
Duration	Module level	Other prerequisites			
1 semest	er undergraduate		site to assessment: ecturer at the beginn	exercises (type and scope to be ing of the course).	
Contents	5				
	nd analysis of algorithms, rec lists, trees, graphs, basic gra			ods, data structures, abstract da-	
Intended	l learning outcomes				
students	are familiar with the basic pa	aradigms of the design	n of algorithms and a	y describe and analyse them. The are able to apply them in practical ns and to prove their correctness.	
Courses	(type, number of weekly contact hours,	language — if other than Ger	rman)		
V + Ü (no	information on SWS (weekly	contact hours) and co	ourse language avail	able)	
	of assessment (type, scope, langu reditable for bonus)	age — if other than German,	examination offered — if no	t every semester, information on whether	
tion date aminatio tion of or	e, the written examination can on in groups. A 80 to 90 minut	be replaced by an orace written examination	al examination of on n is equivalent to a 2	four weeks prior to the examina- e candidate each or an oral ex- o minute (approx.) oral examina- 2 and a 40 minute (approx.) oral	
Allocatio	on of places				
Addition	al information				
Workloa	d				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module a	appears in				
	r' degree (1 major) Aerospace	•	-		
Bachelor	r' degree (1 major) Aerospace	Computer Science (20	011)		

Module title			Abbreviation		
Practical Course in Programming			10-l-PP-102-m01		
Module	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	pl. of module(s)	
10	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme:	ster	undergraduate	Admission prerequis announced by the le		exercises (type and scope to be ing of the course).
Conten	ts				
The pro	gramm	ing language Java. Indep	endent creation of sr	nall to middle-sized	, high-quality Java programs.
Intende	ed learn	ning outcomes			
The stu	dents a	are able to independently	develop small to mi	ddle-sized, high-qua	ality Java programs.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (no in	format	ion on SWS (weekly cont	act hours) and course	e language available	2)
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat aminati tion of	te, the ion in g one car	written examination can roups. A 80 to 90 minute	be replaced by an ora written examination	al examination of on is equivalent to a 2	four weeks prior to the examina- e candidate each or an oral ex- o minute (approx.) oral examina- 2 and a 40 minute (approx.) oral
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Additio	nal info	ormation on module dura	tion: 1 to 2 semesters	5.	
Worklo	ad				
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 49 (1)	1. c) Ir	ıformatik Praktische Soft	wareentwicklung		
§ 69 (1) 1. d) Informatik Praktische Softwareentwicklung					
Module appears in					
Bachelor' degree (1 major) Computer Science (2010) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Digital Humanities (2011)					
First sta	ate exa	mination for the teaching	g degree Realschule C		

Module title	Abbreviation			
Introduction to Core Avionics			10-I-MEC-112-m01	
Module coordinator		Module offered by		
holder of the Chair of Computer Sc	ence VIII	Institute of Comput	er Science	
ECTS Method of grading	Only after succ. con	npl. of module(s)		
10 numerical grade				
Duration Module level	Other prerequisites			
1 semester undergraduate		site to assessment: o ecturer at the beginn	exercises (type and scope to be ing of the course).	
Contents				
Fundamental principles of data pro dance for reliable systems, analog ry, memory organisation, system a ty, fault tolerance. Programming of	ue, digital, FPGAs, radiati rchitecture, input and ou	on effects, micro pro tput, sensors and ac	ogramming, CPUs, DMAs, memo-	
Intended learning outcomes				
Understanding of analogue and dig gramming. Embedded programmin and output systems.				
Courses (type, number of weekly contact ho	urs, language — if other than Gei	rman)		
V + Ü + Ü (no information on SWS (weekly contact hours) an	d course language a	vailable)	
Method of assessment (type, scope, la module is creditable for bonus)	nguage — if other than German,	examination offered — if no	ot every semester, information on whether	
written examination (approx. 80 to tion date, the written examination amination in groups. A 80 to 90 mi tion of one candidate each, a 30 m examination in groups of 3.	can be replaced by an oran oran oran oran oran oran oran o	al examination of on is equivalent to a 2	e candidate each or an oral ex- o minute (approx.) oral examina-	
Allocation of places				
Additional information				
Workload				
Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module appears in				
Bachelor' degree (1 major) Aerospa	ce Computer Science (20	011)		

Module title					Abbreviation		
Automation and Control Technology				10-I-AR-102-m01			
Module	e coord	inator		Module offered by			
holder of the Chair of Computer Scienc			nce VII	VII Institute of Computer Science			
ECTS Method of grading			Only after succ. con	Only after succ. compl. of module(s)			
8	nume	rical grade		· · · ·			
Duratio		Module level	Other prerequisites				
1 seme		undergraduate	Admission prerequi	site to assessment: e ecturer at the beginn		scope to be	
Conten	ts	·					
functio structu nes, co	n, plan re of Pe mmun	t, controller types, bas etri nets, Petri nets for ication between proces	ndamental principles of ic feedback loop, funda automisation, machine as computers and perip nunication, real-time op	amental principles of -related structure of hery devices, softwa	f control engineering processing computa re for automation sy	, automata, tion machi-	
Intend	ed lear	ning outcomes					
			als of automation and c	ontrol.			
			rs, language — if other than Ge				
			ly contact hours) and co		ahle)		
module is	s creditab	le for bonus)	guage — if other than German,				
tion da aminat tion of examir	te, the ion in រួ one ca ation i	written examination ca groups. A 80 to 90 min ndidate each, a 30 mir n groups of 3.	an be replaced by an or ute written examinatior ute (approx.) oral exan nglish if agreed upon w	al examination of on n is equivalent to a 2 nination in groups of	e candidate each or o minute (approx.) o	an oral ex- ral examina-	
Allocat	ion of	places					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulat	ons for teaching-degree progra	ammes)			
Module appears in							
Bachelor' degree (1 major) Computer Science (2010)							
Bachelor' degree (1 major) Mathematics (2012)							
Bachelor' degree (1 major) Mathematics (2013)							
Bachelor' degree (1 major) Computational Mathematics (2012)							
Bachelor' degree (1 major) Computational Mathematics (2013)							
Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011)							
	-		•	J11 <i>)</i>			
	-	ee (1 major) Computer ee (1 major) Mathemat					
		jor Aerospace Computer		enerated 26-Aug-2024 • exan	n. reg. data re-	page 21 / 76	
Science (20	D11)		cord Bachelor (180	ECTS) Luft- und Raumfahrtin	formatik - 2011		

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation
Information Transmission					10-l-lÜ-102-m01
Module coordinator				Module offered by	
holder	of the (Chair of Computer Science	e III	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 seme:	ster	undergraduate	Admission prerequis announced by the le		exercises (type and scope to be ing of the course).
Conten	ts				
theory,	spectr		, modulation techniq	ue, structure of digi	d fault correction, information tal transmission systems, intro-
Intende	ed leari	ning outcomes			
		possess a technical, theo a knowledge that is nece			ructure of systems for information
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua ₎ le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat aminati tion of	te, the ion in g one cai	written examination can groups. A 80 to 90 minute	be replaced by an ora written examination	al examination of on is equivalent to a 2	four weeks prior to the examina- e candidate each or an oral ex- o minute (approx.) oral examina- 2 and a 40 minute (approx.) oral
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
§ 69 (1)	§ 69 (1) 1. c) Informatik Technische Informatik				
Module appears in					
Bachelor' degree (1 major) Computer Science (2010) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) First state examination for the teaching degree Gymnasium Computer Science (2009)					
			, , ,	,	

Module	Module title Abbreviation				
Practica	al Sens	sor and Control Systems	Engineering		10-I-HMR-092-m01
Module	e coord	inator		Module offered by	
holder	of the (Chair of Computer Scienc	e VI	Institute of Comput	ter Science
ECTS	Meth	od of grading	Only after succ. com	pl. of module(s)	
8	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		riments of control aspect ers in robotics or aerospa			mplementation of linear and non-
Intende	ed lear	ning outcomes			
Studen	ts und	erstand closed loop syste	ems and are able to in	nplement and set co	ontrollers.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (no in	format	tion on SWS (weekly cont	act hours) and cours	e language available	e)
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
oral exa tes)	aminat	ion in groups of 2 candid	ates (approx. 30 min	utes) or in groups of	3 candidates (approx. 40 minu-
Allocat	ion of _l	places			
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
	-	ree (1 major) Aerospace (ree (1 major) Aerospace (•	•	



Mathematics (20 ECTS credits)

Bachelor's with 1 major Aerospace Computer Science (2011)

Module title					Abbreviation
Mathematics 1 and 2 for students of Space- and Aerospace Computer Science 10-M-LRI12-092-m01					
Module coordinator Module offered by					
Dean of Studies Mathematik (Mathemati			natics)	Institute of Mathematics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
20	nume	rical grade			
Duration Module level Ot		Other prerequisites			
2 semester undergraduate		By way of exception, additional prerequisites are listed in the section on assessments.			
<u> </u>	-				

Contents

Basics on numbers and functions, sequences and series, elementary functions, differential and integral calculus in one variable, vector calculus, linear maps and systems of linear equations, matrix calculus, eigenvalue theory, differential and integral calculus in several variables, differential equations, Fourier analysis, integral theorems.

Intended learning outcomes

The student gets acquainted with fundamental concepts and methods of mathematics. He/She learns to apply these methods to problems in natural and engineering sciences, in particular in aerospace computer science, and is able to interpret the results.

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

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 10-M-LRI12-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-LRI12-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

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

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 10-M-LRI12-1-092: Mathematics 1 for students of Space- and Aerospace Computer Science Mathematics 1 for students of Space- and Aerospace Computer Science

- 10 ECTS, Method of grading: (not) successfully completed
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e.g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.

Assessment in module component 10-M-LRI12-2-092: Mathematics 2 for students of Space- and Aerospace Computer Science Mathematics 2 for students of Space- and Aerospace Computer Science

- 10 ECTS, Method of grading: numerical grade
- written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)

Bachelor's with 1 major Aerospace Computer	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 26 / 76
Science (2011)	cord Bachelor (180 ECTS) Luft- und Raumfahrtinformatik - 2011	

- Language of assessment: German, English if agreed upon with the examiner
- Other prerequisites: Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e.g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.

Allocation of places

Additional information

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Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Computer Science (2010) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011)



Basics of Physics (19 ECTS credits)

Bachelor's with 1 major Aerospace Computer Science (2011) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record Bachelor (180 ECTS) Luft- und Raumfahrtinformatik - 2011

Module title					Abbreviation	
Introduction to Physics Part 1 for students of Physics Related Minor Subjects					11-ENNF1-062-m01	
Module coordinator				Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
7	nume	rical grade				
Duratio		Module level	Other prerequisites			
1 semes		undergraduate				
Conten	ts	U	L			
		bration theory, thermody	namics.			
		ning outcomes				
		nave basic knowledge of	physics for engineeri	ng students.		
		umber of weekly contact hours, l				
		mation on SWS (weekly o			able)	
			-			
		le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	examir	nation (approx. 120 minu	tes)			
Allocat						
Only as	part o	f pool of general key skill	s (ASQ): 20 places. P	laces will be allocate	ed by lot.	
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
	<u> </u>					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
		· •		-		
Module	appea	rs in				
		ree (1 major) Mathematic	s (2008)			
		ree (1 major) Mathematic				
	-	ree (1 major) Mathematic	•			
Bachelo	or' degi	ree (1 major) Mathematic	s (2013)			
Bachelo	or' degi	ree (1 major) Mathematic	s (2007)			
Bachelo	or' degi	ree (1 major) Technology	of Functional Materia	lls (2009)		
Bachelo	or' degi	ree (1 major) Technology	of Functional Materia	lls (2010)		
Bachelo	Bachelor' degree (1 major) Computational Mathematics (2009)					
Bachelor' degree (1 major) Computational Mathematics (2014)						
	Bachelor' degree (1 major) Computational Mathematics (2012)					
Bachelo	Bachelor' degree (1 major) Computational Mathematics (2013)					
Bachelor' degree (1 major) Aerospace Computer Science (2009)						
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2014)					
Bachelo	or' degi	ree (1 major) Aerospace (Computer Science (20	011)		
Bachelo	or' degi	ree (1 major) Functional N	Aaterials (2012)			
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	lls (2006)		

Bachelor's with 1 major Aerospace Computer	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 29 / 76
Science (2011)	cord Bachelor (180 ECTS) Luft- und Raumfahrtinformatik - 2011	

o Physics Part 2 for stud	ents of Physics Relat	ed Minor Subjects				
lingtor	-					
Module coordinator Module offered by						
		Module offered by				
ector of the Institute of Ap	F I I I I I I I I I I I I I I I I I I I	Faculty of Physics a	and Astronomy			
od of grading	Only after succ. com	pl. of module(s)				
rical grade						
Module level	Other prerequisites					
undergraduate						
ectricity, magnetism, optio	cs, Atomic Physics.					
	nhysics for engineeri	ng students				
	· · · ·	-				
•						
	ge — if other than German, e	examination offered — if no	ot every semester, information on whether			
	tes)					
places						
f pool of general key skill	s (ASQ): 20 places. P	laces will be allocat	ed by lot.			
ormation						
0						
LPUI (examination regulation:	s for teaching-degree progra	mmes)				
•						
		ls (2000)				
Bachelor' degree (1 major) Aerospace Computer Science (2014)						
Bachelor' degree (1 major) Aerospace Computer Science (2011)						
ree (1 major) Aerospace (ree (1 major) Functional N		(11)				
	errical grade Module level undergraduate ectricity, magnetism, option ning outcomes have basic knowledge of number of weekly contact hours, l rmation on SWS (weekly of sessment (type, scope, languation) places of pool of general key skill formation formation et the second state in the second	Prical grade Module level Other prerequisites undergraduate ectricity, magnetism, optics, Atomic Physics. ning outcomes have basic knowledge of physics for engineeri number of weekly contact hours, language — if other than Ger number of weekly contact hours, language — if other than German, epile for bonus) anation (approx. 120 minutes) places of pool of general key skills (ASQ): 20 places. P formation ars in gree (1 major) Mathematics (2008) gree (1 major) Mathematics (2014) gree (1 major) Technology of Functional Materia gree (1 major) Computational Mathematics (2007) gree (1 major) Computational Mathematic	rical grade Module level Other prerequisites undergraduate ectricity, magnetism, optics, Atomic Physics. ning outcomes have basic knowledge of physics for engineering students. number of weekly contact hours, language – if other than German) rrmation on SWS (weekly contact hours) and course language avail sessment (type, scope, language – if other than German, examination offered – if no ale for bonus) nation (approx. 120 minutes) places of pool of general key skills (ASQ): 20 places. Places will be allocate formation refere (1 major) Mathematics (2008) gree (1 major) Mathematics (2014) gree (1 major) Mathematics (2012) gree (1 major) Mathematics (2013) gree (1 major) Mathematics (2013) gree (1 major) Technology of Functional Materials (2009) gree (1 major) Technology of Functional Materials (2009) gree (1 major) Computational Mathematics (2014) gree (1 major) Computational Mathematics (2014) gree (1 major) Computational Mathematics (2012) gree (1 major) Computational Mathematics (2014) gree (1 major) Computational Mathema			

Bachelor's with 1 major Aerospace Computer	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 30 / 76
Science (2011)	cord Bachelor (180 ECTS) Luft- und Raumfahrtinformatik - 2011	

Module title	Abbreviation				
Practical Course A			11-P-PA-092-m01		
Module coordinator		Module offered by			
Managing Director of the Institute o	f Applied Physics	Faculty of Physics a	and Astronomy		
ECTS Method of grading	Only after succ. con	npl. of module(s)			
5 (not) successfully complete	d				
Duration Module level	Other prerequisites				
1 semester undergraduate					
Contents					
Physical laws of mechanics, thermo pagation, graphs, linear regression, tests, writing of lab reports and pub	average values and sta				
Intended learning outcomes					
The students know and have maste le to independently plan and condu measuring protocol. They are able t principles of statistics and to draw,	ct experiments, to coop o evaluate the measurin	erate with others, an g results on the basi	id to document the results in a		
Courses (type, number of weekly contact hou	ırs, language — if other than Ge	rman)			
Auswertung von Messungen und Fe Ü (1 weekly contact hour), once a ye Beispiele aus Mechanik, Wärmeleh BAM): P (2 weekly contact hours)	ar (winter semester)				
Method of assessment (type, scope, lar	nguage — if other than German,	examination offered — if no	ot every semester, information on whether		
module is creditable for bonus)					
 This module has the following asse 1. Topics covered in lectures and ex 2. Lab course: a) Preparing, perform ted if a Testat (exam) is passed. b lated contents of the course (app 	ercises: written examina ing and evaluating the e) Talk (with discussion)	experiments will be o			
Successful completion of approx. 5 1. To pass assessment component 2, portunity to retake element a) and/	students must pass botl				
Students must register for assessment components 1 and 2 online (details to be announced). Students must attend Auswertung von Messungen und Fehlerrechnung (Measurements and Data Analysis) befo- re attending Beispiele aus Mechanik, Wärmelehre und Elektrik (Examples from Mechanics, Thermodynamics and Electricity). To pass this module, students must pass both assessment component 1 and assessment component 2.					
Allocation of places	<u> </u>				
Additional information					
Workload					
Teaching cycle					
L					

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

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

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

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

Module appears in

Bachelor' degree (1 major) Mathematics (2014) Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major) Aerospace Computer Science (2014) Bachelor' degree (1 major) Aerospace Computer Science (2011) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2010) No final examination Special study offering (2010)



Compulsory Electives

(19 ECTS credits)

Module title					Abbreviation
Algorithmic Graph Theory					10-l-GT-102-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	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate	Admission prerequise announced by the le		exercises (type and scope to be ing of the course).
Conten	ts				
colourin of grapi	ngs, wo h probl	ork with planar graphs an	d find out how the ra niliar with new conce	nking algorithm of G epts, for example how	ximal flows, find matchings and oogle works. Using the examples w we model problems as linear
Intende	ed learn	ning outcomes			
cipants	are ab		om the course helps	solve a given graph	problems. In addition, the parti- problem algorithmically. In this prithms.
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
V + Ü (n	io infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
tion dat aminati	te, the ion in g		be replaced by an ora ch: 15 minutes, group	al examination of on os of 2: 20 minutes,	four weeks prior to the examina- e candidate each or an oral ex- groups of 3: 25 minutes)
Allocati	-		v ,		
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Computer Science (2010) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2010) First state examination for the teaching degree Gymnasium Computer Science (2009)					

Module title				Abbreviation		
Knowledge-based Systems					10-l-WBS-102-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Science	e VI	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5		rical grade		-		
Duratio		Module level	Other prerequisites			
1 semes		undergraduate				
Conten		undergraduate				
		n the following areas: kno dge acquisition, learning			e representation, solving me-	
		ning outcomes				
The stu	dents j				g and design of knowledge-based	
		umber of weekly contact hours, l	· ·	•		
		mation on SWS (weekly d			able)	
		· ·				
		le for bonus)	ge — If other than German, e	examination offered — if no	t every semester, information on whether	
if annot ced by nutes, g	unced an oral groups ge of a	examination of one canc of 2: 20 minutes, groups ssessment: German, Eng	eks prior to the exam lidate each or an oral of 3: 25 minutes)	examination in grou	itten examination can be repla- ups (one candidate each: 15 mi-	
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)		
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	irs in				
Bachelo	Bachelor' degree (1 major) Computer Science (2010)					
Bachelor' degree (1 major) Business Information Systems (2013)						
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2009)					
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2011)					
Master's degree (1 major) Computer Science (2010)						
Master's degree (1 major) Mathematics (2012)						
Master'	's degr	ee (1 major) Mathematics	(2010)			
Master'	's degr	ee (1 major) Computation	al Mathematics (2012	2)		
First sta	ate exa	mination for the teaching	degree Gymnasium	Computer Science (2	2009)	

Module title					Abbreviation		
Data Mining					10-I-DM-102-m01		
Module coordinator				Module offered by			
holder of the Chair of Computer Scienc			nce VI	VI Institute of Computer Science			
ECTS Method of grading		Only after succ. compl. of module(s)					
5 numerical grade							
Duration Module level		Other prerequisites	Other prerequisites				
1 semester		undergraduate		Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).			
Contents							
Foundations in the following areas: definition of data mining and knowledge, discovery in databases, process model, relationship to data warehouse and OLAP, data preprocessing, data visualisation, unsupervised learning methods (cluster and association methods), supervised learning (e.g. Bayes classification, KNN, decision trees, SVM), learning methods for special data types, other learning paradigms.							
Intended learning outcomes							
The students possess a theoretical and practical knowledge of typical methods and algorithms in the area of da- ta mining and machine learning. They are able to solve practical knowledge discovery problems with the help of the knowledge acquired in this course and by using the KDD process. They have acquired experience in the use or implementation of data mining algorithms.							
Courses (type, number of weekly contact hours, language — if other than German)							
V + Ü (no information on SWS (weekly contact hours) and course language available)							
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)							
written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examina- tion date, the written examination can be replaced by an oral examination of one candidate each or an oral ex- amination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes) Language of assessment: German, English if agreed upon with the examiner							
Allocation of places							
Additional information							
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Computer Science (2010)							
Bachelor' degree (1 major) Business Information Systems (2013)							
Bachelor' degree (1 major) Aerospace Computer Science (2009)							
Bachelor' degree (1 major) Aerospace Computer Science (2011)							
Master's degree (1 major) Computer Science (2010)							
Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010)							
Master's degree (1 major) Computational Mathematics (2012)							
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin	-	page 36 / 76	



First state examination for the teaching degree Gymnasium Computer Science (2009)

Bachelor's with 1 major Aerospace Computer Science (2011)

Module title					Abbreviation	
Object	-oriente	ed Programming			10-I-00P-102-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Compute	r Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade		-		
Duration Module level Other prerequisites						
1 seme		undergraduate		site to assessment: (exercises (type and s	scope to be
1 Senie	5101	undergraduite		ecturer at the beginn		
Conten	Its					
Polymo ment.	Polymorphism, generic programming, meta programming, web programming, templates, document manage- ment.					
Intende	ed lear	ning outcomes				
The stu their pr		are proficient in the difi use.	erent paradigms of ob	iect-oriented prograr	nming and have exp	erience in
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	rman)		
l + V + Ü (1	no infoi	mation on SWS (weekl	y contact hours) and co	ourse language avail	able)	
		sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
tion da aminat Langua	te, the ion in g age of a	nation (approx. 50 to 6 written examination ca groups (one candidate ssessment: German, E	n be replaced by an or each: 15 minutes, grou	al examination of on ps of 2: 20 minutes,	e candidate each or	an oral ex-
Allocat	ion of p	Diaces	_			
Additio	onal Inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	immes)		
Module						
	-	ree (1 major) Computer				
	-	ree (1 major) Mathemat ree (1 major) Mathemat				
	-	ree (1 major) Mathemati ree (1 major) Business		2012)		
	-	ree (1 major) Busiliess ree (1 major) Computat		-		
	-	ree (1 major) Computat				
	-	ree (1 major) Aerospace				
	-	ree (1 major) Aerospace	•	•		
	-	ee (1 major) Computer S	•)		
	-	ee (1 major) Physics (20				
	-	ee (1 major) Physics (20				
	-	ee (1 major) Nanostruct				
Bachelor's	with 1 ma	or Aerospace Computer	JMU Würzburg ● ge	enerated 26-Aug-2024 • exan	n. reg. data re-	page 38 / 76
Science (20				ECTS) Luft- und Raumfahrtin	-	



Master's degree (1 major) Nanostructure Technology (2010)

Module	e title				Abbreviation		
Theory	of Con	ıplexity			10-I-KT-102-m01		
Module	e coord	inator		Module offered by			
Dean o	f Studi	es Informatik (Compute	r Science)	Institute of Comput	er Science		
ECTS	Methe	od of grading	Only after succ. cor	npl. of module(s)			
5	nume	rical grade					
Duration Module level Other prerequi			Other prerequisites	ites			
1 seme	ster	undergraduate		Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).			
Conten	ts						
sumpti	on vers	easurements and class sus computation time, c roblem, completeness	leterminism versus inc	determinism, hierarcl	hical theorems, trans		
Intende	ed lear	ning outcomes					
classes determ	s, gene inism v	possess a fundamental ral relationships betwe versus indeterminism, h ing reduction, interactiv	en space and time clas ierarchical theorems,	sses, memory consur	nption versus comp	utation time,	
Course	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)			
V + Ü (r	no info	rmation on SWS (weekly	/ contact hours) and c	ourse language avail	able)		
		Sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informat	ion on whether	
tion da aminat	te, the ion in ន្	nation (approx. 50 to 60 written examination ca groups (one candidate 6 ssessment: German, Er	n be replaced by an or each: 15 minutes, grou	al examination of on ps of 2: 20 minutes,	e candidate each or	an oral ex-	
Allocat	ion of _l	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
Module	e appea	ars in					
	-	ree (1 major) Computer					
	-	ree (1 major) Mathemat					
	-	ree (1 major) Mathemat ree (1 major) Computati	-	12)			
	-	ree (1 major) Computati					
	-	ree (1 major) Aerospace		-			
	-	ree (1 major) Aerospace	•	011)			
	-	ee (1 major) Computer S					
Master	s aegr	ee (1 major) Mathemati	5 (2012)				
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan 9 ECTS) Luft- und Raumfahrtin	-	page 40 / 76	



Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation	
Compu	ter Arch	litecture			10-I-RAK-102-m01	
Module	e coordi	nator		Module offered by	·	
Dean of	f Studie	s Informatik (Compute	er Science)	Institute of Comput	er Science	
ECTS	Metho	d of grading	Only after succ. con	npl. of module(s)		
5		ical grade				
	Duration Module level Other prerequisites					
1 seme		undergraduate	- · ·	site to assessment: •	overcises (type and a	scopo to bo
		unuergraduate		ecturer at the beginn		
-	Contents					
	Instruction set architectures, command processing through pipelining, statical and dynamic instruction schedu- ling, caches, vector processors, multi-core processors.					
Intende	ed learn	ing outcomes				
		naster the most impor operating systems.	tant techniques to desi	gn fast computers as	s well as their intera	ction with
Course	S (type, ni	umber of weekly contact hour	s, language — if other than Ge	rman)		
V + Ü (r	no infori	mation on SWS (week	y contact hours) and co	ourse language avail	able)	
		essment (type, scope, lang e for bonus)	guage — if other than German,	examination offered — if no	ot every semester, informati	ion on whether
tion dat aminat Langua	te, the v ion in g ige of as	written examination ca roups (one candidate ssessment: German, E	o minutes); if announc In be replaced by an or each: 15 minutes, grou nglish if agreed upon w	al examination of on ps of 2: 20 minutes,	e candidate each or	an oral ex-
Allocat	ion of p	laces				
			_			
Additio	onal info	ormation				
Worklo	ad					
Teachir	ng cycle	9				
Referre	ed to in l	LPO I (examination regulati	ons for teaching-degree progra	ammes)		
		formatik Technische li				
	e appea					
		ee (1 major) Computer	Science (2010)			
	-	ee (1 major) Mathema				
	-	ee (1 major) Mathema				
	-		ional Mathematics (20	12)		
Bachel	or' degr	ee (1 major) Computat	ional Mathematics (20	13)		
Bachel	or' degr	ee (1 major) Aerospac	e Computer Science (20	009)		
Bachel	or' degr	ee (1 major) Aerospac	e Computer Science (20	011)		
Master	's degre	e (1 major) Computer	Science (2010)			
	-	e (1 major) Mathemat				
	-	e (1 major) Mathemat				
		e (1 major) Physics (2				
Master	's degre	e (1 major) Physics (2	011)			
Bachelor's Science (20		or Aerospace Computer		enerated 26-Aug-2024 • exan • ECTS) Luft- und Raumfahrtin	-	page 42 / 76

Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Computational Mathematics (2012)

Module	e title				Abbreviation	
Softwa	re Tech	inology			10-l-ST-102-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Compute	r Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	rical grade		-		
Duration Module level Other prerequi			Other prerequisites	5		
1 seme	ster	undergraduate		Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).		
Conten	ts					
bases a	and obj	ed software developme ject-relational mapping d process, agile softwa	, foundations of web p	orogramming (HTML,	XML), software deve	
Intende	ed lear	ning outcomes				
The stu softwa		possess a fundamental ems.	theoretical and practi	cal knowledge on the	e design and develo	pment of
Course	S (type, r	number of weekly contact hours	5, language — if other than Ge	rman)		
1) Ü + V	no infoi	rmation on SWS (weekl	y contact hours) and c	ourse language avail	able)	
		Sessment (type, scope, lang Ile for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
examin Allocat		n groups of 3. Dlaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)		
	-)atenbanksysteme und)atenbanksysteme und	-			
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Computer	Science (2010)			
	-	ree (1 major) Mathemat				
	Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Economathematics (2012)					
	-	ree (1 major) Economat ree (1 major) Business		2012)		
	-	ree (1 major) Human-Co		-		
	-	ree (1 major) Computat				
	-	ree (1 major) Computat		-		
Bachel	or' deg	ree (1 major) Aerospace	e Computer Science (20	009)		
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan DECTS) Luft- und Raumfahrtin	-	page 44 / 76



Bachelor' degree (1 major) Aerospace Computer Science (2011) First state examination for the teaching degree Realschule Computer Science (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation		
Compu	ter Net	works and Communica	tion Systems		10-I-RK-102-m01		
Module	e coord	inator		Module offered by			
holder	of the (Chair of Computer Scie	nce III	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
8 numerical grade							
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate		Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course).			
Conten	ts						
Properties of computer and communication systems: data traffic in distributed systems. Performance analysis of computer networks and communication systems: problem statement and introduction to method architecture and structure of computer networks: network structure, network access, access methods, digital transfer hierarchies, dataflow control and traffic control, transfer network. Communication protocols: fundamental principles and ISO architecture models. Internet: structure and basic mechanism, TCP/IP, routing, network management. Mobile communication networks: fundamental concepts, GSM, UMTS. Future communication systems and networks.							
	ed lear	ning outcomes					
The stu	idents		owledge of the structur rate these systems.	re of computer netwo	orks and communica	tion systems	
		· · · ·	s, language — if other than Gei	rman)			
	-		y contact hours) and co		able)		
Metho	d of ass		guage — if other than German,			on on whether	
tion da aminat tion of examir	te, the ion in g one can nation i	written examination ca groups. A 80 to 90 min ndidate each, a 30 min n groups of 3.	o minutes). If announc in be replaced by an or ute written examinatior ute (approx.) oral exam nglish if agreed upon w	al examination of on i is equivalent to a 2 ination in groups of	e candidate each or o minute (approx.) o	an oral ex- ral examina-	
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	mmes)			
		· · · · ·					
Module	e appea	ars in					
Bachel Bachel Bachel Bachel Bachel Bachel	Module appears inBachelor' degree (1 major) Computer Science (2010)Bachelor' degree (1 major) Mathematics (2012)Bachelor' degree (1 major) Mathematics (2013)Bachelor' degree (1 major) Computational Mathematics (2012)Bachelor' degree (1 major) Computational Mathematics (2013)Bachelor' degree (1 major) Aerospace Computer Science (2009)						
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin		page 46 / 76	

Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation
Practica	al Cour	se in Hardware			10-I-HWP-102-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	eted		
Duration Module level Other pr		Other prerequisites			
1 semes	ster	undergraduate			
Contents					
		riments on hardware asp croprocessor.	ects, for example in o	communication tech	nology, robots or the structure of
Intende	ed learr	ning outcomes			
					s with the help of experiment de- ment and evaluate experiment
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (no in	format	ion on SWS (weekly cont	act hours) and course	e language available)
		eessment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		project assignments, pre of the course)	esentation (type and o	expenditure of time t	to be specified by the lecturer at
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module					
	-	ree (1 major) Computer S		,	
	-	ree (1 major) Aerospace (•	
		ree (1 major) Aerospace (mination for the teaching			
		mination for the teaching ination Special study offe	- ,	computer Science (2	2009)

Module title	9			Abbreviation		
Robotics				10-l=RO-102-m01		
Module coo	rdinator		Module offered by			
holder of th	e Chair of Computer Scier	nce VII	Institute of Comput	er Science		
ECTS Met	hod of grading	Only after succ. con	npl. of module(s)			
8 nun	nerical grade					
Duration	Module level	Other prerequisites				
1 semester	graduate		prerequisites as spece. g. completion of e	ified by the lecturer xercises).	at the begin-	
Contents						
History, applications and properties of robots, direct kinematics of manipulators: coordinate systems, rotations, homogenous coordinates, axis coordinates, arm equation. Inverse kinematics: solution properties, end effector configuration, numerical and analytical approaches, examples of different robots for analytical approaches. Workspace analysis and trajectory planning, dynamics of manipulators: Lagrange-Euler model, direct and inverse dynamics. Mobile robots: direct and inverse kinematics, propulsion system, tricycle, Ackermann steering, holonomes and non-holonome restrictions, kinematic classification of mobile robots, posture kinematic model. Movement control and path planning: roadmap methods, cell decomposition methods, potential field methods. Sensors: position sensors, speed sensors, distance sensors.						
	arning outcomes					
The student	s master the fundamenta atics and dynamics as we				niliar with	
	e, number of weekly contact hours					
	formation on SWS (weekl			able)		
Method of a	ISSESSMENT (type, scope, lang table for bonus)				ion on whether	
tion date, th amination i tion of one examination	nination (approx. 80 to 9 ne written examination ca n groups. A 80 to 90 minu candidate each, a 30 min n in groups of 3. f assessment: German, El	n be replaced by an or te written examinatior ute (approx.) oral exam	al examination of on i is equivalent to a 2 hination in groups of	e candidate each or o minute (approx.) o	an oral ex- ral examina-	
Allocation of		<u></u>				
Additional i	nformation					
Workload						
	•					
Teaching cy	rcle					
Referred to	in LPO I (examination regulation	ons for teaching-degree progra	ammes)			
Module app						
Bachelor' d Master's de	Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2012)					
	gree (1 major) Mathemati					
Bachelor's with 1 Science (2011)	major Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin	-	page 49 / 76	



Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation	
Ordina	ry Diffe	rential Equations			10-M-ODE-082-m01	-
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathe	matics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 semester undergraduate		sessment. The lecture at the beginning of the sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment i	es must be met to qua irer will inform stude the course. Registrat on of will to seek adm d the qualification fo mester, the lecturer t. Students who mee n the current or in th date, students will h sment anew.	nts about the respection for the course wints in the course wints on to assessment radmission to assest will put their registrates were subsequent semesticated with the semestic transmission to assest the subsequent semestic transmission to assest the subsequent semestic transmission to assest transmission tr	ctive details ill be con- nt. If stu- ssment over ation for as- ill be admit- ster. For as-	
Conten	ts					
			continuous dependenc ial series; linear differe			of linear dif-
Intende	ed lear	ning outcomes				
			undamental concepts a nese methods to praction		neory of ordinary dif	erential
Course	S (type, r	number of weekly contact hour	rs, language — if other than Ge	rman)		
V + Ü (r	no info	mation on SWS (week	ly contact hours) and co	ourse language avail	able)	
		sessment (type, scope, lang le for bonus)	guage — if other than German,	examination offered — if no	t every semester, informat	on on whether
by an o 2, appr	oral exa ox. 30	mination of one candio minutes)	utes); if announced by date each (approx. 20 n nglish if agreed upon w	ninutes) or an oral ex		•
Allocat						
Additio	onal inf	ormation				
Worklo	ad					
	,					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulat	ions for teaching-degree progra	ammes)		
Module	e appea	nrs in				
	-	ree (1 major) Computer				
	-	ree (1 major) Compute ree (1 major) Physics (2				
	-		gy of Functional Materia	als (2009)		
	-		gy of Functional Materia	-		
Bachelor's Science (20		or Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin	-	page 51 / 76

Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) Bachelor' degree (1 major) Technology of Functional Materials (2006)

Module	e title				Abbreviation
Numeri	ical Ma	thematics 1			10-M-NM1-082-m01
Module	e coord	inator		Module offered by	<u> </u>
		es Mathematik (Mathem	atics)	Institute of Mathem	natics
ECTS	r	-	F		laties
	1	od of grading	Only after succ. con		
8	<u> </u>	rical grade			
Duratio	on	Module level	Other prerequisites		
1 semester undergraduate		Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.			
Conten	tc			sincin anew.	
Solutio	n of sys	stems of linear equation tion with polynomials, s			quations and systems of equati- rical integration.
Intende	ed leari	ning outcomes			
		acquainted with the fun oblems and knows abou			erical mathematics, applies the
Course	S (type, n	umber of weekly contact hours,	language — if other than Ger	man)	
V + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)
		essment (type, scope, langua le for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether
by an o 2, appr	oral exa fox. 30		te each (approx. 20 n	ninutes) or an oral ex	tten examination can be replace xamination in groups (groups of
Allocat			5		
Additio	nal inf	ormation			
			_		
Worklo					
Teachi		٥			
	is cycl	•			
Referre	d to in	LPO I (examination regulation	is for teaching-degree progra	mmes)	
		hematik Angewandte Ma			
Module					
Bachel Bachel Bachel Bachel	or' deg or' deg or' deg or' deg	ree (1 major) Computer S ree (1 major) Mathematic ree (1 major) Physics (20 ree (1 major) Physics (20 ree (1 major) Physics (20	cs (2008) 10) 09)		
	with 1 maj	or Aerospace Computer	JMU Würzburg • ge	enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin	

UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module	e title				Abbreviation	
Numeri	cal Ma	thematics 2			10-M-NM2-082-mo	1
Module	e coord	inator		Module offered by		
Dean of	f Studi	es Mathematik (Mathe	matics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semester undergraduate		sessment. The lecture at the beginning of the sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment in sessment at a later	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.			
Conten	ts					
		ods and applications f al equations, boundar	for eigenvalue problems y value problems.	s, linear programmin	g, initial value probl	ems for ordi-
Intende	ed lear	ning outcomes				
about t	heir ad		tion between the differents concerning the poss mics.			
Course	S (type, r	number of weekly contact hour	s, language — if other than Ger	man)		
V + Ü (r	no infoi	rmation on SWS (week	y contact hours) and co	ourse language avail	able)	
		sessment (type, scope, lang le for bonus)	guage — if other than German, o	examination offered — if no	t every semester, informat	on on whether
by an o 2, appr	ral exa ox. 30	mination of one candio minutes)	utes); if announced by date each (approx. 20 n nglish if agreed upon w	ninutes) or an oral ex		
Allocat			·			
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
	-	hematik Angewandte I	Mathematik			
Module						
Bachelo Bachelo	or' deg or' deg	ree (1 major) Mathema ree (1 major) Physics (2 ree (1 major) Physics (2 ree (1 major) Physics (2	2010) 2009)			
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin		page 55 / 76
				,		1

UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Introd	e title				Abbreviation	
	uction t	o Control Theory			10-M=ARTH-102-m	01
Modul	e coord	inator		Module offered by		
Dean c	of Studi	es Mathematik (Mathem	atics)	Institute of Mathematics		
ECTS	Meth	od of grading	Only after succ. compl. of module(s)			
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 semester graduate		Registration for the exercise must be made via SB@home at the begin- ning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e. g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to as- sessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their re- gistration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent seme- ster. For assessment at a later date, students will have to obtain the qua-				
			lification for admiss	lification for admission to assessment anew.		
Conter	nts					
Intend	ed lear	lge of the contents of th ning outcomes				
blish a	conne	acquainted with the fur ction between these res ds of mathematics.				
blish a and ot	conne her field	ction between these res	ults and broader theo	ries, and learns abo		
blish a and ot Course	t conne her field es (type, r	ction between these resids of mathematics.	ults and broader theo language — if other than Gen	ries, and learns abo	ut the interactions of	
blish a and ot Course V + Ü (Metho	t conne her field es (type, r no info d of ass	ction between these rest ds of mathematics. number of weekly contact hours,	ults and broader theo language — if other than Gen contact hours) and co	ries, and learns abo man) ourse language avai	ut the interactions of lable)	fgeometry
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua	t connect her field connection co	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of ssessment: German or E	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be i in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua	t conne her field s (type, r no info d of ass is creditab n exami ed by at s of 2, a sment o ter, cou	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of ssessment: German or E	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat	t connec her field connection connection d of ass screditable n exami ed by an so f 2, a sment o ter, cou age of a tion of p	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat	t connec her field connection connection d of ass screditable n exami ed by an so f 2, a sment o ter, cou age of a tion of p	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of ssessment: German or E	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat Additic	t connec her field (type, r no infor d of ass is creditable n exami ed by a is of 2, a sment o ter, cou age of a tion of p	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat	t connec her field (type, r no infor d of ass is creditable n exami ed by a is of 2, a sment o ter, cou age of a tion of p	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu ble for bonus) nation (approx. 90 to 12 n oral examination of on approx. 30 minutes) iffered: Assessment offe urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat Additio Worklo	t connec her field (type, r no infor d of ass is creditable n exami ed by a is of 2, a sment o ter, cou age of a tion of p	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12- n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat Additio Worklo	tonned her field (type, r no infor d of ass is creditable n exami ed by all s of 2, a sment o ter, cou age of a tion of p onal inf	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12- n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examinat an oral examination	f geometry ion on whether ion can be in groups
blish a and ot Course V + Ü (Metho module i written replace (group Assess semes Langua Allocat Additio Worklo Teachi	tonned her field (type, r no infor d of ass is creditable e exami ed by a s of 2, a sment o ter, cou age of a tion of p onal inf	ction between these rest ds of mathematics. number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ble for bonus) nation (approx. 90 to 12- n oral examination of on approx. 30 minutes) iffered: Assessment offe- urse offered on demand of issessment: German or E places	ults and broader theo language — if other than Ger contact hours) and co age — if other than German, o minutes); if announ e candidate each (app red in the semester in or every four semester English	ries, and learns abo rman) ourse language avai examination offered — if n ced by the lecturer, o orox. 20 minutes) or which the course is	ut the interactions of lable) ot every semester, informat the written examination offered and in the s	f geometry ion on whether ion can be in groups

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

Module appears in

Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Economathematics (2011) Master's degree (1 major) Mathematical Physics (2012) Master's degree (1 major) Computational Mathematics (2012)

Module title Abbr					Abbreviation	
Non-Liı	near Dy	vnamics			10-M-NLD-072-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathe	matics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 semester undergraduate		sessment. The lecture at the beginning of the sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment in sessment at a later	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.			
Conten	ts					
			punov theory; stable m ons in physics and biolo			
Intende	ed lear	ning outcomes				
			undamental concepts a methods to simple site			eir proof me-
Course	S (type, r	number of weekly contact hou	rs, language — if other than Ge	rman)		
V + Ü (r	no infoi	rmation on SWS (week	ly contact hours) and co	ourse language avail	able)	
		sessment (type, scope, lan le for bonus)	guage — if other than German,	examination offered — if no	t every semester, informat	ion on whether
by an o 2, appr	oral exa ox. 30	mination of one candio minutes)	utes); if announced by date each (approx. 20 n nglish if agreed upon w	ninutes) or an oral ex		
Allocat	ion of j	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulat	ions for teaching-degree progra	ammes)		
§ 73 (1)	1. Mat	hematik Analysis				
Module	e appea	ars in				
Bachel Bachel Bachel Bachel	or' deg or' deg or' deg or' deg	ree (1 major) Mathema ree (1 major) Mathema ree (1 major) Economa ree (1 major) Economa ree (1 major) Mathema	tics (2007) thematics (2009) thematics (2008)			
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exam ECTS) Luft- und Raumfahrtinf	-	page 59 / 76
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Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module title					Abbreviation	
Control Engineering					10-I-STE-092-m01	
Module coordinator				Module offered by		
Dean o	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)		
4	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	Academic requirements nounced by the lect		rcises. Type and scope to be an- g of the course.	
Conten	ts					
The mo	dule te	aches the foundations of	f control technology.			
Intende	ed leari	ning outcomes				
The stu	dents i	master the fundamentals	of control technology	у.		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
tion da aminat	te, the ion in g		be replaced by an ora	al examination of on	four weeks prior to the examina- e candidate each or an oral ex- groups of 3: 25 minutes)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ıg cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
1	-	ree (1 major) Aerospace (ree (1 major) Aerospace (•	-		

Module title					Abbreviation	
Autonomous Systems					10-I-ASY-092-m01	
Module coordinator				Module offered by		
Dean of	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
4	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme:	ster	undergraduate	Academic requirements nounced by the lect		rcises. Type and scope to be an- g of the course.	
Conten	ts					
This co	urse te	aches the foundations of	autonomous system	s.		
Intende	ed lear	ning outcomes				
The stu	dents i	master the fundamentals	of autonomous syste	ems.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
tion dat aminati	te, the ion in ខ្ន		be replaced by an ora	al examination of on	four weeks prior to the examina- e candidate each or an oral ex- groups of 3: 25 minutes)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
	Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011)					

Module title					Abbreviation	
Seminar Space Modelling					10-I-SRM-092-m01	
Module	e coord	inator		Module offered by		
holder	of the C	Chair of Computer Scienc	e VII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		eview of a current topic i written and oral presenta		ion technology base	ed on literature and, if applicable,	
Intende	ed learr	ning outcomes				
		are able to independently spects in written form and			mation technology, to summari- e way.	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
talk (ap	prox. 3	30 to 45 minutes) and wri	tten elaboration (app	orox. 5 to 10 pages)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	e appea	ars in				
	-	ree (1 major) Aerospace (
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2011)					

Astrop					Abbreviation					
Astrophysics					11-A4-072-m01					
Module coordinator				Module offered by						
Managing Director of the Institute of Theoretical Physics and Astrophysics				Faculty of Physics a	and Astronomy					
ECTS	T	od of grading	Only after succ. con	npl. of module(s)						
6	1	rical grade								
Durati		Module level	Other prerequisites	i						
1 semesterundergraduateAdmission prerequisite to assessment: successful completion 50% of exercises. Certain prerequisites must be met to qualif sion to assessment. The lecturer will inform students about th ve details at the beginning of the course. Registration for the 				ify for admis- the respecti- e course will essment. If ssessment gistration for will be ad- mester. For						
pes an	y of astr nd detec	onomy, coordinates an tors, stellar structure, s	stellar atmospheres, st	ellar evolution, final	stages of stellar evo	olution, inter-				
large-s nucleo	scale str synthe	n, structure of the Milky ructure of the universe, sis, cosmic microwave l	Friedmann World Mod	els, thermodynamic	s of the early univers					
	led lear	ning outcomes	Intended learning outcomes							
physic	al obse: hey kno	are familiar with the mo rvations and evaluatior w the structure of the u	ns. They are able to use	e these methods to p	olan and analyse own	n observati-				
physic ons. Th lopme	al obse hey kno nt.	rvations and evaluatior	ns. They are able to use niverse, e.g. of stars a	e these methods to p nd galaxies and und	olan and analyse own	n observati-				
physic ons. Th lopme Course	al obse hey kno nt. es (type, r	rvations and evaluatior w the structure of the u	ns. They are able to use niverse, e.g. of stars a s, language – if other than Ge	e these methods to p nd galaxies and und rman)	olan and analyse own erstand the process	n observati-				
physic ons. The lopme Course V + S (Metho	al obse hey kno nt. es (type, r no infor od of ass	rvations and evaluatior w the structure of the u number of weekly contact hours	ns. They are able to use niverse, e.g. of stars a s, language — if other than Ge y contact hours) and co	e these methods to p nd galaxies and und rman) ourse language avail	olan and analyse own erstand the process able)	n observati- of their deve				
physic ons. Th lopme Course V + S (1 Metho module i	al obse hey kno nt. es (type, r no infor od of ass is creditab	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang	ns. They are able to use niverse, e.g. of stars a s, language — if other than Ge y contact hours) and co uage — if other than German,	e these methods to p nd galaxies and und rman) ourse language avail	olan and analyse own erstand the process able)	n observati- of their deve				
physic ons. The lopme Course V + S (1 Metho module in writter	al obse hey kno nt. es (type, r no infor od of ass is creditab	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir	ns. They are able to use niverse, e.g. of stars a s, language — if other than Ge y contact hours) and co uage — if other than German,	e these methods to p nd galaxies and und rman) ourse language avail	olan and analyse own erstand the process able)	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Alloca	al obse hey kno nt. es (type, r no infor od of ase is creditat n exami tion of p	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (1 Metho module in writter Allocat Only a	al obse hey kno nt. es (type, r no infor od of ass is creditab n exami tion of p s part o	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir places	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (1 Metho module in writter Allocat Only a	al obse hey kno nt. es (type, r no infor od of ass is creditab n exami tion of p s part o	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir blaces f pool of general key sk	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (1 Metho module in writter Allocat Only a	al obse hey kno nt. es (type, r no infor od of ass is creditab n exami tion of p s part o onal inf	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir blaces f pool of general key sk	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Allocat Only a Additio Worklo	al obse hey kno nt. es (type, r no infor od of ass is creditab n exami tion of r s part o onal inf	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir places f pool of general key sk ormation	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Allocat Only a Additio Worklo	al obse hey kno nt. es (type, r no infor od of ass is creditab n exami tion of p s part o onal inf	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir places f pool of general key sk ormation	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes)	e these methods to p nd galaxies and und man) ourse language avail examination offered — if no	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Allocat Only a Additio Worklo Teachi 	al obse hey kno nt. es (type, r no infor od of ass is creditat n exami tion of r s part o onal inf oad	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 min places f pool of general key sk ormation	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes) ills (ASQ): 15 places. P	e these methods to p nd galaxies and und man) purse language avail examination offered — if no laces will be allocato	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Allocat Only a Additio Worklo Teachi 	al obse hey kno nt. es (type, r no infor od of ass is creditat n exami tion of r s part o onal inf oad	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir places f pool of general key sk ormation	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes) ills (ASQ): 15 places. P	e these methods to p nd galaxies and und man) purse language avail examination offered — if no laces will be allocato	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (Metho module i writter Allocat Only a Additio Worklo Teachi Referro 	al obse hey kno nt. es (type, r no infor od of ass is creditate n exami tion of p s part o onal inf oad ing cycl ed to in	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 min blaces f pool of general key sk ormation e E	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes) ills (ASQ): 15 places. P	e these methods to p nd galaxies and und man) purse language avail examination offered — if no laces will be allocato	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (i) Metho module i writter Allocat Only a Additio Worklo Teachi Referro Modul	al obse hey kno nt. es (type, r no infor od of ass is creditat n exami tion of p s part o onal inf oad ing cycl ed to in	rvations and evaluation w the structure of the u number of weekly contact hours mation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 mir olaces f pool of general key sk ormation e LPO I (examination regulation ars in	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes) ills (ASQ): 15 places. P	e these methods to p nd galaxies and und man) purse language avail examination offered — if no laces will be allocato	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				
physic ons. The lopme Course V + S (i Metho module i writter Allocat Only a Additio Worklo Teachi Referro Modul	al obse hey kno nt. es (type, r no infor od of ass is creditat n exami tion of p s part o onal inf oad ing cycl ed to in	rvations and evaluation w the structure of the u number of weekly contact hours rmation on SWS (weekly sessment (type, scope, lang le for bonus) nation (approx. 120 min blaces f pool of general key sk ormation e E	ns. They are able to use niverse, e.g. of stars and s, language — if other than Ge y contact hours) and co uage — if other than German, nutes) ills (ASQ): 15 places. P	e these methods to p nd galaxies and und man) purse language avail examination offered — if no laces will be allocato	olan and analyse own erstand the process able) ot every semester, informat	n observati- of their deve				



Module Catalogue for the Subject Aerospace Computer Science Bachelor's with 1 major, 180 ECTS credits

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2009) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Mathematical Physics (2012) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) Computational Mathematics (2012) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2008) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2010)

Module title					Abbreviation	
Practical Course Part B (Aircraft and Spacecraft Informatics))	11-P-PB-LR-092-mo	1
Module coordinator			Module offered by			
Manag	Managing Director of the Institute of Applied Physics Fac			Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
6	(not) s	successfully completed	11-P-PA			
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conter	Its					
			lynamics, optics, scien neasuring methods usi			
Intend	ed lear	ning outcomes				
are abl	e to inc	_	xills of physical measur onduct experiments in	-		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ger	man)		
Elektriz Wellen Atom-	zitätsle optik (F und Kei	hre und Schaltungen (E Physical Optics, WOP): nphysik (Atomic and N	KLP): P (2 weekly cont Electricity and Circuits, I P (2 weekly contact hou uclear Physics, AKP): P ers and Measurement	ELS): P (2 weekly cor urs) (2 weekly contact he	ours)	ours)
Metho	d of ass	sessment (type, scope, lang	uage — if other than German, e	examination offered — if no	t every semester, informati	ion on whether
		le for bonus)				
1. Lab ly co phys 2. Lab ly co	course mplete sics-rela course mplete	d if a Testat (exam) is p ated contents of the co in part 2: a) Preparing, d if a Testat (exam) is p	sment components performing and evaluat bassed. b) Talk (with dis urse (approx. 30 minute performing and evalua bassed. b) Talk (with dis urse (approx. 30 minute	scussion) to test the es). ting the experiments scussion) to test the	students' understar will be considered s	nding of the successful-
Students must register for assessment components 1 and 2 online (registration deadline to be announced). Students will be offered one opportunity to retake element a) and/or element b). To pass an assessment compo- nent, they must pass both elements a) and b). To pass this module, students must successfully complete two out of the five courses. Students must attend KLP or ELS courses prior to attending WOP, AKP or CMT courses. To pass this module, students must pass both assessment component 1 and assessment component 2.						
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	mmes)		
		hysik Mechanik, Wärm hysik Aufbau der Mate	elehre, Elektrizitätslehr rie	e, Optik, der speziel	len Relativitätstheor	ie
Bachelor's Science (2		or Aerospace Computer		nerated 26-Aug-2024 • exam ECTS) Luft- und Raumfahrtinf	-	page 66 / 76
Science (2	~ 1 1)			Letter und Raumanitim	5din 2011	

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

§ 77 (1) 1. b) Physik "Fortgeschrittene Experimentalphysik"

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

Module appears in

Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011)

Module	e title				Abbreviation		
Atmosphere and Space Physics					11-AWP-092-m01		
Module coordinator				Module offered by	<u> </u>		
		ector of the Institute of T	heoretical Physics	Faculty of Physics a	and Astronomy		
and Ast							
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
6	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective de at the beginning of the course. Registration for the course will be co- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment the course of the semester, the lecturer will put their registration for sessment into effect. Students who meet all prerequisites will be ac- ted to assessment in the current or in the subsequent semester. For sessment at a later date, students will have to obtain the qualification admission to assessment anew.				
Conten	ts						
	agnetos	anetary atmospheres. In pheres and interplaneta					
Intende	ed lear	ning outcomes					
and nea ry spac	ar-Eartl e missi	nave knowledge of the p n space. They are able to ions. number of weekly contact hours,	apply the acquired k	nowledge to the sol			
R + V (n	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		eessment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	ot every semester, informat	ion on whether	
groups or d) pr Assess and wil examin	(appro resenta ment o Il be an nation r	mination (approx. 90 mi x. 30 minutes per candi tion/seminar presentati ffered: When and how o nounced in due form un egulations) 2009. ssessment: German or E	date) or c) project rep on (approx. 30 minute ften assessment will l der observance of Sec	ort (approx. 8 pages es) be offered depends (, time to complete: 1 on the method of as:	. to 4 weeks) sessment	
Allocat	ion of p	olaces					
Additio	nal inf	ormation	_				
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	ammes)			
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan ECTS) Luft- und Raumfahrtin		page 68 / 76	

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) Computational Mathematics (2012)

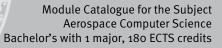


Subject-specific Key Skills

(ECTS credits)

Module title					Abbreviation		
Operating Systems					10-l-BS-102-m01		
Module coordinator				Module offered by			
holder	of the C	Chair of Computer Science	e ll	Institute of Comput	er Science		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	numei	rical grade					
Duratio	ľ	Module level	Other prerequisites				
1 seme	ster	undergraduate			exercises (type and scope to be ing of the course).		
Conten	ts						
schedu nageme	lers, pr ent, seg	ocess synchronisation, s	emaphores, monitor systems, interfaces, d	s, critical regions, de	eads, cooperating processes, eadlocks, dynamic memory ma- etwork file systems, hard drive		
Intende	ed learr	ning outcomes					
The stu	dents p	oossess knowledge and p	practical skills in buil	ding and using esse	ntial parts of operating systems.		
Course	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
V + Ü (r	io infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
tion dat aminati	te, the ion in g		be replaced by an ora ch: 15 minutes, group	al examination of on os of 2: 20 minutes,	four weeks prior to the examina- e candidate each or an oral ex- groups of 3: 25 minutes)		
Allocat	ion of p	olaces					
Additio	nal info	ormation					
Worklo	ad						
Teachir	ng cyclo	9					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
		formatik Technische Info					
Module	Module appears in						
	Bachelor' degree (1 major) Computer Science (2010)						
Bachelo	or' degi	ree (1 major) Aerospace (Computer Science (20				
	-	ree (1 major) Aerospace (•	911)			
	-	ee (1 major) Computer Sc					
	-	ee (1 major) Physics (2010					
	-	ee (1 major) Physics (201: ee (1 major) Nanostructur					
	-						
musici	Master's degree (1 major) Nanostructure Technology (2010)						

Module title					Abbreviation	
Databases 10-I-DB-102-m01						
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Compute	er Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
5		rical grade				
Duratio		Module level	Other prerequisites			
1 seme	0	undergraduate	Admission prerequi	site to assessment: ecturer at the beginn		scope to be
Conten	ts		·			
Relatio ment.	nal alg	ebra and complex SQL	statements; database	planning and norma	l forms; transaction	manage-
Intende	ed lear	ning outcomes				
The stu	dents	possess knowledge ab	out database modellin	g and queries in SQL	. as well as transacti	ons.
		number of weekly contact hour				
		mation on SWS (weekl			able)	
Method	d of ass	sessment (type, scope, lang	· · ·			ion on whether
ced by nutes,	an oral groups ge of a	by the lecturer by four v examination of one ca of 2: 20 minutes, grou ssessment: German, E	ndidate each or an ora ps of 3: 25 minutes)	l examination in gro		
Allocal		Jaces				
Additio	natini	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)		
		atenbanksysteme und atenbanksysteme und	_			
Module	e appea	urs in				
	-	ree (1 major) Computer				
	-	ree (1 major) Mathema				
	-	ree (1 major) Mathema				
Bachelor' degree (1 major) Business Information Systems (2013) Bachelor' degree (1 major) Computational Mathematics (2012)						
	Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013)					
	-	ree (1 major) Aerospace		-		
	-	ree (1 major) Aerospace	•	-		
	-	ree (1 major) Functiona				
	-	ee (1 major) Computer				
Master	's degr	ee (1 major) Mathemati	cs (2012)			
Bachelor's Science (20		jor Aerospace Computer		enerated 26-Aug-2024 • exan 9 ECTS) Luft- und Raumfahrtin	-	page 72 / 76



Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Realschule Computer Science (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)

Module title					Abbreviation	
Aerosp	Aerospace Laboratory				10-I-LRLA-092-m01	
Module	coord	inator		Module offered by		
holder	of the (Chair of Computer Scienc	e VIII	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
stems, ground of air ar	sensor segme nd spa	s and actuators, energy, nt for different compone	structure (construction nts and systems of a complex development	on) of a satellite mod r and space flight, s	on of physical/mechanical sy- lel/simulator, construction of a tructure of simplified subsystems re, hardware, electronics and	
Intende	ed learr	ning outcomes				
electror a devel	nics an opmen	d mechanics by themselv t will be tested: capture o	ves as well as to oper of requirements, rudi	ate, test and docum mentary design, deta	nsisting of software, hardware, ent these. The whole life cycle of ailed design, modelling, imple- ce, transfer to the successor mo-	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
practica	al exerc	cises (time to complete: a	approx. 6 weeks) and	documentation (app	prox. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module						
	-	ree (1 major) Aerospace (•			
Bachelo	Bachelor' degree (1 major) Aerospace Computer Science (2011)					

Module title Abbreviation					Abbreviation	
Semina	Seminar for students of Space- and Aerospace Computer Science 10-I-LRS-092-m01					
Module	e coord	inator		Module offered by		
holder	of the (Chair of Computer Scienc	e VII	Institute of Comput	ter 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					
		review of a current topic i re with written and oral p		ion technology on t	he basis of literature and, if appli-	
Intende	ed lear	ning outcomes				
		are able to independently spects in written form and			rmation technology, to summari- e way.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
talk (ap	prox. 3	30 to 45 minutes) and wri	tten elaboration (app	orox. 5 to 10 pages)		
Allocat	ion of _l	places				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in				
	Bachelor' degree (1 major) Aerospace Computer Science (2009)					
Bachelor' degree (1 major) Aerospace Computer Science (2011)						

Module title Abbreviation					Abbreviation	
Excursion Space- and Aerospace 10-I-LREX-092-m01					10-I-LREX-092-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Informatik (Computer	Science)	Institute of Comput	er Science	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
1	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo	odule ir	ncludes a field trip in the	area of aerospace in	formation technolog	у.	
Intende	ed lear	ning outcomes				
The stu	dents l	pecome familiar with prac	ctical aspects of aero	space engineering.		
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
E (no in	format	ion on SWS (weekly cont	act hours) and course	e language available)	
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
field tri	p log (a	approx. 2 pages)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					
Bachel	or' deg	ree (1 major) Aerospace (Computer Science (20	009)		
Bachel	Bachelor' degree (1 major) Aerospace Computer Science (2011)					