Appendix A: Course Schedule

for the study programme Mechatronics B.Sc.

Please note: The German version of this document is the legally binding version. The English translation provided here is for information purposes only.

First sem	nester		L	ST	Е	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1019	Career-Focused Project	BOP	0	0	0	2	0	5
1073	Electrical Engineering 1	ET1	2	1	0	1	0	5
1106	Computer Science 1 – Imperative	IN1	2	1	0	1	0	5
	Programming							
1129	Construction Basics	KG	2	1	0	1	0	5
1149	Mathematics 1	MA1	2	2	0	0	0	5
1260	Technical Mechanics 1	TM1	2	1	0	1	0	5
						Tota	I CP:	30
Second s	emester		L	ST	Ε	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1063	Electronics	EL	2	1	0	1	0	5
1110	Computer Science 2 – Object-	IN2	2	1	0	1	0	5
	Oriented Programming							
1125	Mechanical Design 1	KM1	2	1	0	1	0	5
1155	Mathematics 2	MA2	2	2	0	0	0	5
1319	Physics	PHY	2	1	0	1	0	5
1261	Technical Mechanics 2	TM2	2	1	0	1	0	5
						Tota		30
Third ser	nester		L	ST	Ε	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1076	Electrical Engineering 2	ET2	2	1	0	1	0	5
1316	Computer Science 3 – Software	IN3	2	1	0	1	0	5
	Architectures for Physical Computing							
1126	Mechanical Design 2	KM2	2	1	0	1	0	5
1160	Mathematics 3	MA3	2	2	0	0	0	5
1168	Metrology	MT	2	1	0	1	0	5
1224	Project 3	PR3	0	0	0	2	0	5
						Tota		30
Fourth se	emester		L	ST	Ε	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1027	Business Administration	BWL	3	1	0	0	0	5
1094	Finite Element Methods	FEM	2	1	0	1	0	5
1232	Integrated Product Development	IP	2	2	0	0	0	5
1225	Project 4	PR4	0	0	0	2	0	5
1234	Automatic Control Engineering	RT	2	1	0	1	0	5
1263	Technical English	TEN	0	4	0	0	0	5
						Tota	I CP:	30

Fifth sem	nester		L	ST	Е	P/S	SSS	СР
Module number	Module title	Module ID						
1029	Machine Vision	BIL	2	1	0	1	0	5
1313	Electric Drive Systems	EAS	2	1	0	1	0	5
1297	Project 5	PR5	0	0	0	2	0	5
1240	Robotics	ROB	2	1	0	1	0	5
9002	Elective Module	WM				0		5
9002	Elective Module	WM				0		5
						Total	CP:	30
Sixth ser	nester		L	ST	E	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1079	Embedded Systems	ESYS	2	1	0	1	0	5
1311	Intelligent Sensor Systems	ISS	2	1	0	1	0	5
1164	Mechatronics	ME	2	1	0	1	0	5
1229	Quality Management	QM	2	2	0	0	0	5
9002	Elective Module	WM				0		5
9002	Elective Module	WM				0		5
						Total	CP:	30
Seventh	semester		L	ST	Ε	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1291	Bachelor Thesis	BA	0	0	0	0	0	12
1290	Colloquium	KOL	0	0	0	0	0	3
1292	Practical Project / Internship	PRA	0	0	0	0	0	15
						Total	CP:	30

Abbreviations of the teaching forms: L = lecture, ST = tuition in seminars, E = exercise, S = seminar, P = practical, SSS = supervised self-study (all data in semester credit hours);

CP = credit points W/S = winter/summer semester

The practical project can optionally be replaced by a semester abroad.

Elective	Modules Mechatronics								
Module number	Module title	Module ID	W/ S	L	ST	Е	P/S	SSS	СР
1041	Database Applications	DBA	S	2	1	0	1	0	5
1308	Electromobility / Vehicle Dynamics	FDE	W	2	2	0	0	0	5
3135	Gender and Diversity: Success Factors for Companies	GUD	W	2	2	0	0	0	5
1101	High-Frequency Electronics	HFE	W	2	1	0	1	0	5
1102	Industrial Engineering / Lean Management	INLM	S	2	1	0	1	0	5
1275	Industrial Marketing	IGM	W	3	1	0	0	0	5
1113	Innovation and Change Management	IVM	W	2	2	0	0	0	5
1115	International Management/Marketing	IMM	S	2	2	0	0	0	5

1123	Engineering Designing with Plastics	KMK	S	2	1	1	0	0	5
1134	Plastics Technology	KT	S	2	1	0	1	0	5
1181	Network Technology	NW	W	2	1	0	1	0	5
1309	Photonics	PHO	S	2	0	1	1	0	5
1209	Product and Price Management	PPM	W	3	1	0	0	0	5
1212	Production Planning	PRP	S	2	2	0	0	0	5
1214	Production Engineering	PRT	W	2	2	0	0	0	5
1231	Computer Architectures	RA	W	2	1	0	1	0	5
1244	Simulation Technology	SIM	W	2	1	0	1	0	5
6004	Textile Technologies	TEX	S	2	2	0	0	0	5
1276	Sales and Distribution Management	VM	S	3	1	0	0	0	5
1278	Materials and Component Testing	WBP	W	2	0	0	2	0	5

Appendix B: Module catalogue

for the study programme Mechatronics B.Sc.

Bachelor Thesis
Career-Focused Project
Business Administration
Machine Vision
Database Applications
Electric Drive Systems
Electromobility / Vehicle Dynamics
Electronics
Electrical Engineering 1
Electrical Engineering 2
Embedded Systems
Finite Element Methods35
Gender and Diversity: Success Factors for Companies
High-Frequency Electronics
Industrial Engineering / Lean Management
Sales and Distribution Management 1 – Industrial Goods Marketing41
Computer Science 1 – Imperative Programming
Computer Science 2 – Object-Oriented Programming45
Computer Science 3 – Software Architectures for Physical Computing47
Innovation and Change Management
Integrated Product Development
Sensors and Actuators
International Management/Marketing54
Colloquium56
Engineering Designing With Plastics
Mechanical Design 1
Mechanical Design 2
Construction Basics60
Plastics Technology62
Mathematics 1

Mathematics 2	65
Mathematics 3	66
Mechatronics	67
Measuring Technology	69
Network Technology	70
Photonics	72
Physics	74
Practical Project / Internship	76
Product and Price Management	77
Production Planning	78
Production Engineering	80
Project 3 with Design Aspects	82
Project 4 with Communication Aspects	83
Specialist Project with Marketing Aspects	85
Quality Management	86
Computer Architecture	88
Automatic Control Engineering	90
Robotics	91
Simulation Technology	93
Technical Mechanics 1	95
Technical Mechanics 2	96
Technical English	97
Textile Technologies	99
Sales and Distribution Management 2	100
Elective Module	102
Materials and Component Testing	103

	helor Thesi	is							BA	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the	Durati	on:
129	1	360 h	12	12 6th or 7th sem.		em.	Each sen	nester	12 weeks	
1	Course:	1	Planned group si	izes	Scope)	Actual c time / cl teaching	assroom	Self-stu	dy
	Lecture		60 students		0	SCH	0	h	360	h
	Tuition in	n seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	methods Contents:		terdisciplinary co	omexis,	WUIKI	ng muel	chaenny	and acco	numg to	SCICILLIIC
3	Contents:									
5	The back	nelor thesis is o	usually an independent ould deal with the	e subjec	t matte	in detai	led descri	ptions and	l explanat	ions
J	The back	nelor thesis is begy task. It should be deal with the		e subjec	t matte	in detai	led descri	ptions and	l explanat	ions
4	The back technolo It should written p	nelor thesis is begy task. It should be deal with the	ould deal with the	e subjec	t matte	in detai	led descri	ptions and	l explanat	ions
	The back technolo It should written p	nelor thesis is a gy task. It sho I deal with the paper.	ould deal with the e subject matter i	e subjec	t matte	in detai	led descri	ptions and	l explanat	ions
4	The back technolo It should written p	nelor thesis is a ogy task. It sho d deal with the paper. teaching:	ould deal with the e subject matter i	e subjec	t matte	in detai	led descri	ptions and	l explanat	ions
4	The back technolog It should written professional Participate	nelor thesis is begy task. It shed deal with the paper. teaching: tion requirement	ould deal with the e subject matter i	e subjec in detai	t matter led dese	in detai	led descri and expl	ptions and anations a	l explanat	ions
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4 5	The back technolog It should written professional Formal: Content: Forms of	nelor thesis is a gy task. It shot deal with the paper. teaching: tion requiremen None Coor assessment:	ould deal with the e subject matter i	e subjec in detai	t matter led dese	in detai	led descri and expl	ptions and anations a	l explanat	ions
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4 5 6	The back technologit should written processing the should written processing and the should written processing the should be a second processing the should be a s	nelor thesis is a gy task. It she deal with the paper. teaching: tion requirement None Coortises Seement: itte for the award on of the modulive Biotechnolo, Mechanical and Engineering ce of the grade is seen to the grade in the seen t	buld deal with the e subject matter is ts: edinated topic from dof credit points: le (in the following logy (B.Sc.), Elec Engineering (B.E.	m the st study prectrical Eding.), M	t matter led dese	special specia	subject are	ptions and anations a	l explanat and be pre	ions epared as
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	er-Focuse	d Project							ВОР	
Ident numb	ification	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duratio	on:
1019		150 h	5	1st se	em.		Annual (Winter)		1 sem.	
1	Course:	,			e	time / cl	Actual contact time / classroom teaching		ly	
	Lecture		60 students		0	SCH	0	h	0	h
	Tuition in	n seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		2	SCH	30	h	120	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/con	npetences:		ļ					
3	Contents - Overv - Classi - Overv	: riew of the fiction of miew of tasks	elds of activity and echatronics in rela in the professional	I the eve	eryday other ei	work of	a mechatr	onics engi		ical facts
	- Task o - Project docum	t managemei	nd structuring of ta nt techniques, pres earch and source v	entation work		_				
	practio	ce or training		ess on a	simple	tecimica	ii example	nom eve	- ,,	neering
4	Forms of	ce or training		ess on a	simple	technica	ai example	mom eve		neering
	Forms of Seminar Participal Formal:	teaching: project tion requireme	nts:	ess on a	simple	technica	il example	Hom eve		neering
5	Forms of Seminar Participal Formal: Content:	teaching: project tion requireme Not	nts:	ess on a	simple	technica	ii example	Troil eve	,,,	neering
5	Forms of Seminar Participal Formal: Content: Forms of Term pa	teaching: project tion requireme Non assessment:	nts: ne ne examination, comb	pination	examii					
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11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	iness Adm	inistration							BWL	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency offer	of the	Duratio	n:
102		150 h	5	2nd o	or 4th s	em.	Annual (Summer)	1 sem.	
1	Course:	1	Planned group sizes Scope		e	Actual c time / cl teaching	assroom	Self-study		
	Lecture		60 students		3	SCH	45	h	67.5	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	Supervis	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	netences:							
	can app		ods and tools for nagement instrui							
3	Contents	:								
3	- C - B - C - ir - C - B	Classification, casic concepts Overview of the offormation level corporate goals	and corporate keeps of private and co	nistratio function ey figure	n / basi nal area es / key	ic princi is of the	ples of eco goods eco	nomic act		
3	- C - B - C - ir - C - B - C	classification, classic concepts overview of the aformation level corporate goals asic concepts	of business admi e entrepreneurial el and corporate ke of private and co	nistratio function ey figure	n / basi nal area es / key	ic princi is of the	ples of eco goods eco	nomic act		
	- C - B - C - ir - C - B - C Forms of Lecture,	Classification, classic concepts overview of the aformation level corporate goals casic concepts corporate legal corporate legal ceaching:	of business admi e entrepreneurial el and corporate ke of private and co forms d teaching with c	nistratio function ey figure ommercia	n / basi nal area es / key al law	ic princi	ples of eco goods eco systems	nomic act		
	- C - B - C - ir - C - B - C - S - C - Participa	classification, classic concepts overview of the formation level corporate goals asic concepts corporate legal creaching: seminar-base tion requirement	of business admi e entrepreneurial el and corporate ke of private and co forms d teaching with c	nistratio function ey figure ommercia	n / basi nal area es / key al law	ic princi	ples of eco goods eco systems	nomic act		
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4 5 6 7 8 9	- CC - B - CC - III - CC - B - CC - B - CC - B - CC - Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat Importan accordir Module C Prof. Dr Other inf	classification, classic concepts described by the formation level corporate goals described by the formation level corporate legal described by the formation requirement with the formation properties of the grade and to BRPO officer: "The remains the remain	of business admi e entrepreneurial el and corporate ke of private and co forms d teaching with c ts: e combination exar d of credit points: bass le (in the following logy (B.Sc.) and for the final grade:	nistration function ey figure ommercia case stude mination g study pr	n / basinal area es / key al law ies and i, perfo	rmance (B.Sc.)	ples of eco goods eco systems	nomic act	ancial and	on

	chine Visio	n							BIL	
Iden num	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequency offer	of the	Duration	ı:
1029	9	150 h	5	5th s	sem.		Annual (Winter)		1 sem.	
1	Course:	1	Planned group s	sizes	Scope	2	actual co time / cla teaching		Self-study	ý
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com	petences:		•	•	•	•	٠	•
	Demons	trate and appl areas of appli	the basic conce y the basic descri cation. Understa g independent sol	ptive toon	ols and i	analytic t the pr	al methods actical sigr	of machin	ne vision. N of machine	ame the
3	Contents:									
	acquisiti program contour matching biotechn	on, basics of toming systems analysis and of g, colour imatellological and	and current development develo	or the action the vision of th	quisitio ion pro the spat ions of design	n of scengramme ial and machin of mac	nes, illumines, LUT and frequency rate vision a	ation and d grey va ange, mo s a quali	object posi alue progra rphology, t ity assuran	itioning amming emplat ce tool
		, design of vi	sion systems for j	process	monito	nng.				VISIO
4	Forms of		Sion systems for j	process	monito	ring.				VISIO
4				process	monitor	ring.				VISIO
4 5	Lecture,	teaching:	d exercises	process	monitor	ring.				VISIO
	Lecture,	teaching:	d exercises	process	monito	ring.				VISIO
	Lecture, Participat Formal: Content:	teaching: practicals and tion requirement Non Non	d exercises ats:	process	monito	ring.				VISIO
6	Lecture, Participat Formal: Content: Forms of Written	teaching: practicals and tion requirement Non Non assessment: examination,	d exercises ats: e e combination exa				examinatio	n or oral e	examination	
5	Lecture, Participat Formal: Content: Forms of Written of Prerequise	teaching: practicals and tion requirement Non Non assessment: examination, ite for the awar	d exercises ats: e e combination examined of credit points:	mination	ı, perfo		examinatio	n or oral e	examination	
5 6 7	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module	teaching: practicals and tion requirement Non Non assessment: examination, tite for the awar examination processing the second of the second o	d exercises ats: e e combination example of credit points: bass and course a	mination	n, perfo	rmance	examinatio	n or oral e	examination	
5 6 7	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Application Apparation	teaching: practicals and tion requirement Non Non assessment: examination, ite for the awar examination pon of the modulive Biotechno	d exercises ats: e e combination examed of credit points: bass and course a le (in the following logy (B.Sc.), Ele	mination ssessme g study p ctrical E	n, perfor	rmance				n
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Application Apparation Industrial	teaching: practicals and tion requirement Non Non assessment: examination, ite for the aware examination properties of the modulive Biotechnood Engineering to of the grade	d exercises ats: e e combination exart d of credit points: bass and course a le (in the following	mination ssessme g study p ctrical E nt (B.Sc	n, perfor	rmance				n
6	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Apparati Industriat Important accordin Module O	teaching: practicals and tion requirement Non Non assessment: examination, tite for the aware examination pon of the modulive Biotechnoral Engineering to BRPO Officer:	d exercises tts: e combination exar d of credit points: bass and course a le (in the following logy (B.Sc.), Ele g and Management for the final grade:	mination ssessme g study p ctrical E nt (B.Sc	n, perfor	rmance				n
5 6 7 8 9	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Apparati Industriat Important accordin Module of Prof. Dr.	teaching: practicals and tion requirements Non Non assessment: examination, tite for the aware examination pon of the modulive Biotechnoral Engineering to BRPO Officer:Ing. Reinham	d exercises tts: e combination exar d of credit points: bass and course a le (in the following logy (B.Sc.), Ele g and Management for the final grade:	mination ssessme g study p ctrical E nt (B.Sc	n, perfor	rmance				n
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Apparati Industria Important accordin Module of Prof. Dr. Other info	teaching: practicals and tion requirement Non Non assessment: examination, tite for the aware examination pon of the modulive Biotechnoral Engineering to BRPO Officer:Ing. Reinhar ormation:	d exercises tts: e e combination example of credit points: pass and course a le (in the following logy (B.Sc.), Elegand Management for the final grade: d Kaschuba	mination ssessme g study p ctrical E nt (B.Sc	n, perforent rogramn Engineer	rmance nes) ring (B.)				n
5 6 7 8 9	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Apparati Industria Important accordin Module of Prof. Dr. Other info	teaching: practicals and tion requirement Non Non assessment: examination, ite for the aware examination properties of the grade age to BRPO Officer: -Ing. Reinhard ormation: re will be anneason and the second of the grade age to the grade age	d exercises tts: e combination exar d of credit points: bass and course a le (in the following logy (B.Sc.), Ele g and Management for the final grade:	mination ssessme g study p ctrical E nt (B.Sc	n, perforent rogramn Engineer	rmance nes) ring (B.)				n

	abase Appl	ications							DBA	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duration	1:
104	1	150 h	5	6th se	em.		Annual (Summer)		1 sem.	
1	Course:		Planned group sizes Scope		e	Actual contact time / classroom teaching		Self-study	I	
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		1	SCH	15	h	22.5	h
2		ed self-study outcomes/comp	60 students		0	SCH	0	h	0	h
	they may - Stur give of c (JP) - The gro data - Stur	y are able to in them practical dents insert ne en criteria and object-relational A). e students apply up work accombase and to in dents will be a	es, and can explated ependently desirably in an SQL date where we data into a relation tables according and any techniques of where we will be to compare, cand will be able to the series and the series and the series are series as the series are series are series as the series are series are series as the series are series as the series are series are series as the series are series as the series are series are series as the series are se	gn real- tabase. tional d ding to re famili- reb servodel-Vio via a wo ombine	atabase chosen iar with er prog ew-Con eb inter and ev	objects and ending the control of th	as a hierarc m complex ty rules. The d interfaces g (e.g. Java Software-Pa	queries o ey unders s of the Ja EE) and p attern to	f data acco tand the pr va Persister plan applica modify da	el and t rding t inciple nce AF ations i
3	- Bas - Intr - Use - Intr - Intr	owledge of the ic concepts of oduction to SQ of SQL to creoduction to JD oduction to production to p	architecture, fun relational and ob QL (Structured Quate, delete, modif OBC and JPA, ogramming dynar abases in web ap	ject-relation je	ational nguage query d	data mo e), ata recon s (e.g. Ja	odels, rds, vaEE) using	g differen	t UI frame	works,
4	Forms of Lecture,		l teaching, projec	t and gr	oup wo	ork with	in the frame	ework of	the internsh	nip
	Lecture,			t and gr	oup wo	ork with	in the frame	ework of	the internsh	nip
5	Lecture,	seminar-based	s:	t and gr	oup wo	ork with	in the frame	ework of t	the internsh	nip
	Lecture, Participat	ion requirement None Good Modu 1109	s: I knowledge in th	e field o	-				the internsh	nip

7	Prerequisite for the award of credit points:
	Module examination pass and course assessment
8	Application of the module (in the following study programmes)
	Engineering Computer Sciences (B.Eng.) and Mechatronics (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Lutz Grünwoldt
11	Other information:
	Literature will be announced at the beginning of the course. A script will be provided.
12	Language:
	German

Elec	etric Drive	Systems							EAS		
Iden num	tification	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duratio	n:	
131		150 h	5	5th s	5th sem.		Annual (Winter)		1 sem.	1 sem.	
1	Course:		Planned group s	Planned group sizes		e	Actual contact time / classroom teaching		Self-stud	Self-study	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition is	n seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
		or seminar	15 students		1	SCH	15	h	22.5	h	
2	•	ed self-study outcomes/comp	60 students		0	SCH	0	h	0	h	
3	represer	ntation for mod will be enabled ions.	a drive system delling the rotatin d to commission t	g field	machin	es and d	limension t	hem for th	ne control	based on	
	- Comp - Intera - Torqu - Desig - Mode - Space - Desig - Mode - Struct - Opera - Behav	conents and base ctions of the free formation in and operation lling and contractor vector for the and operation lling and contractor and model ting behavious viour of the AS	requency inverter rotating electrical g behaviour of D rol of the drive sy description of rog g behaviour of sy rol of the drive sy ling of the async r of the ASM on a M during operat	es with the all machine of machine of machine of the all machines of the all	he main ines ines ith DC eld ma ous ma ith PSN machi I netwo	machines chines dines di	notor es verter	earings			
4		teaching: seminar-base	d teaching with e	xercises	and pi	actical c	course				
5	Participa Formal: Content:	1070 Mec	ts: trical Engineering Industrial Engin hatronics), Electr puter Sciences, 1	eering a onics (1	ınd Ma 063 M	nagemei echatror	nt), Electric nics. 1067 a	cal Engine and 1069 I	ering II (1 Engineerin	076	
6		assessment:	xamination or ora	ıl exami	nation						
	Term paper, written examination or oral e Prerequisite for the award of credit points:										
7 Prerequisite for the award of credit points: Module examination pass and course assessment 8 Application of the module (in the following study programmes)											

9	Importance of the grade for the final grade:
	according to BRPO or SPO if ungraded elective subject
10	Module Officer:
	Prof. DrIng. Andreas Bünte
11	Other information:
12	Language:
	German

Elec	Electromobility / Vehicle Dynamics										
Identification Workload: number:		Credits: Stu		Study	idy semester:		Frequency of the offer		Durati	on:	
1308		150 h		5	5th o	5th or 7th sem.		Annual (Winter)		1 sem.	
1	Course:		Planned group size		es	es Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60	60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students			2	SCH	30	h	45	h
	Exercise		20	students		0	SCH	0	h	0	h
	Practical or seminar		15	15 students		0	SCH	0	h	0	h
	Supervised self-study 6		60	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comr	l	cos:		1	ļ			<u> </u>	

2 Learning outcomes/competences:

The students have a sound knowledge of the power and energy requirements of motor vehicles depending on the respective usage profile and the real cycle. They are familiar with the various theoretical driving cycles and have mastered simulation tools for evaluating the energy demand for both theoretical and real driving cycles of motor vehicles.

The students are familiar with the various drive configurations and components of electrically powered vehicles and the different drive concepts of hybrid vehicles and are particularly familiar with the differences in energy conversion systems between conventional and electric drive train systems. They will be able to simulate driving cycles of electric vehicles on the basis of characteristic diagrams of the energy storage and energy converters on the basis of sound knowledge of longitudinal vehicle dynamics. The students are able to evaluate the possibilities and limits of electric mobility with regard to the respective application profile of the individual vehicle and know the requirements for the electrical energy supply when using electric vehicles.

3 Contents:

- Longitudinal vehicle dynamics: Power and energy demand
- Vehicle powertrain of conventional drive systems
- Vehicle powertrain of alternative drive systems
- Energy converter in the vehicle powertrain
- Hybrid drive systems
- Driving cycles: Theoretical driving cycles / real driving cycles
- Recording and evaluation of real driving cycles
- Energy balancing using the example of a self-driven driving cycle
- Mobile energy storage systems in comparison
- Electrical energy storage
- Charging and discharging characteristics
- Demand-oriented design of electric vehicles
- Primary energy supply / energy flows
- Possible contribution of networked energy storage systems for e-mobiles to the balancing of peak loads in electricity grids

4 Forms of teaching:

Lecture, seminar-based teaching

5 Participation requirements:

	Formal:						
	Content:	General basic knowledge in the subject mechanics / dynamics is assumed					
6	Forms of assessm	ent:					
	Written examina	ation, combination examination, performance examination or oral examination					
7							
	Module examin	ation pass and course assessment					
8	Application of the	e module (in the following study programmes)					
	Mechatronics (I	3.Sc.)					
9	Importance of the	grade for the final grade:					
	according to BR	RPO					
10	Module Officer:						
	Prof. DrIng. H	Ierbert Funke					
11	Other information	1:					
12	Language:						
	German						

Elec	etronics								EL		
Iden	tification	Workload:	Credits:	Study	ly semester:		Frequency of the offer		Duratio	Duration:	
106		150 h	5	2nd s	sem.		Annual (Summer)		1 sem.		
1	Course:	1	Planned group s	Planned group sizes		e	Actual contact time / classroom teaching		Self-stud	Self-study	
	Lecture		60 students		2	SCH	30	h	45	h	
		n seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h	
	Superviso	ed self-study	60 students		0	SCH	0	h	0	h	
2	_	outcomes/comp	petences: ents listed below	.1	1 .	1	1 ,	.1.1	C 1 .		
	these fie		es engineers and l ore, they can cla l assemblies.								
3	FundaSemioOpera	re components amentals of ser conductor com tional amplifie	niconductor phys aponents, in parti- ers and their appl I analogue circuit	cular did		d transis	stors and th	eir basic o	circuits		
	- Integr	ated Circuits/N	Microelectronics ment and manufa								
4		teaching:	d teaching with e	vercises	nracti	cal cour	·se				
5		tion requiremen		oner er se s	, pract	cur cour	.50				
	Formal:										
	Content: Electrical Engineering1 (1073)										
		Elect	-	g1 (1073	3)						
	Forms of	Electrassessment:	trical Engineerin		3)						
6	Forms of Written	Electrassessment:	trical Engineering		3)						
6	Forms of Written Prerequis	Electronic assessment: examination of site for the awar	or oral examination	on							
6 7	Forms of Written Prerequis Module	Electrassessment: examination of site for the awar examination p	or oral examination of credit points: bass and course a	on ssessme	nt	age)					
6 7	Forms of Written Prerequis Module Applicati	Electrassessment: examination of the awar examination properties on of the moduli	or oral examination of credit points: bass and course a le (in the following	on ssessme g study pr	nt ogramn						
6 7 8	Forms of Written Prerequis Module Applicati	Electronic assessment: examination of the modulive Biotechnolic assessment:	or oral examination of credit points: bass and course a le (in the following logy (B.Sc.) and	on ssessme g study pr Mechatr	nt ogramn						
6 7 8	Forms of Written Prerequis Module Applicati Apparat Importan	Electronic assessment: examination of the awar examination properties on of the modulive Biotechnolic of the grade	or oral examination of credit points: bass and course a le (in the following	on ssessme g study pr Mechatr	nt ogramn						
6 7 8	Forms of Written Prerequis Module Applicati Apparat Importan	Electronic assessment: examination of the awar examination proon of the modulive Biotechnolice of the gradeing to BRPO	or oral examination of credit points: bass and course a le (in the following logy (B.Sc.) and	on ssessme g study pr Mechatr	nt ogramn						
6 7 8	Forms of Written Prerequise Module Application Apparate Important accordine Module Control	Electronic assessment: examination of the awar examination proon of the modulive Biotechnolice of the gradeing to BRPO	or oral examination of oral examination of credit points: bass and course a le (in the following logy (B.Sc.) and for the final grade:	on ssessme g study pr Mechatr	nt ogramn						
6 7 8 9	Forms of Written Prerequis Module Applicati Apparat Importan accordir Module 0 Prof. Dr	Electronic assessment: examination of site for the awar examination properties on of the modulive Biotechnology of the grade ag to BRPO Officer:	or oral examination of oral examination of credit points: bass and course a le (in the following logy (B.Sc.) and for the final grade:	on ssessme g study pr Mechatr	nt ogramn						
6 7 8 9	Forms of Written Prerequision Module Application Apparate Importante according Module (Prof. Drof. Dro	Electronic assessment: examination of the awar examination proof the modulive Biotechnolice of the grade ag to BRPO Officer: -Ing. Andreas formation: re will be annother the second control of the grade agree to the grade	or oral examination of oral examination of credit points: bass and course a le (in the following logy (B.Sc.) and for the final grade:	ssessme g study pr Mechati	nt rogramn ronics (B.Sc.)					
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Elec	trical Engi	neering 1								ET1	
Iden num	tification ber:	Worklo	ad:	Credits:	Study	semest	er:	Frequency	of the	Duratio	on:
1073	3	150 h		5		em.		Annual (Winter)		1 sem.	
1	Course:		Pl	Planned group sizes			e	Actual of time / cl teaching	assroom	Self-stuc	ly
	Lecture		60) students		2	SCH	30	h	45	h
		n seminars	30) students		1	SCH	15	h	22.5	h
	Exercise		20) students		0	SCH	0	h	0	h
		or seminaı		students		1	SCH	15	h	22.5	h
		ed self-stud) students		0	SCH	0	h	0	h
3	ChargResistEnergDC ciSeriesNetwoMagn	knowledge, current ance and y and pov rcuits, cou , parallel ork calcula	t and volutes and volutes the control of the contro	tage, electric e behaviour, row systems, ge circuit, vo nduction, ind esses, sinuso	Ohm's l , Kirchh ltage an luctance	aw off theo d curre , force	orems, ic nt divide	deal and reer the magn	al sources		rce
4	Lectures Participa	teaching:	ements:	cals							
	Formal: Content:		None None								
6		assessmer		,							
7	Prerequis	ite for the	award of	al examination credit points:							
8	Applicati	on of the r	nodule (ir	and course at the following	g study pr	ogramn					
				(B.Sc.) and		onics (B.Sc.)				
9	_			ne final grade:							
	accordin	g to BRP	U								
10	Module (ycc.									

11	Other information:						
	Literature will be announced at the beginning of the course.						
	see ILIAS						
12	Language:						
	German						

	trical Engi	ineering 2							ET2		
Ident numl	tification ber:	Workload:	Credits:	Study semester:			Frequency of the offer		Duratio	Duration:	
1076	5	150 h	5	3rd o	or 5th sem.		Annual (Winter)		1 sem.	1 sem.	
1	Course:		Planned group s	Planned group sizes			Actual contact time / classroom teaching		Self-stuc	ly	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
		or seminar	15 students		1	SCH	15	h	22.5	h	
		ed self-study outcomes/com	60 students		0	SCH	0	h	0	h	
they can classify and evaluate the practical and economic significance. Stude design and apply advanced electrotechnical boundary conditions for application of study. 3 Contents:											
3	Basic fe	ature:									
3	Basic fe Basic ele System of Dynamic Complet Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, l cuits, resonan function, fre filters analysis	soidal signals, expected rent power, active	ponentia e power nce beha	l oscill	ation	esponse				
3	Basic fe Basic ele System of Dynamic Complex Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, cuits, resonance function, fre filters analysis	soidal signals, expect rent power, active Nyquist plot at circuits, resonar quency response,	ponentia e power nce beha amplitu	l oscill viour de and	ation phase re					
4	Basic fe Basic ele System of Dynamic Complete Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of Lecture,	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinu- nce, admittance e power, appa hase current cy response, cuits, resonant function, fre filters analysis teaching: seminar-base	soidal signals, expect rent power, active Nyquist plot at circuits, resonar quency response,	ponentia e power nce beha amplitu	l oscill viour de and	ation phase re					
4	Basic fe Basic ele System of Dynamic Complex Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier Forms of Lecture, Participar	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinu- nce, admittance e power, appa hase current cy response, cuits, resonant function, fre filters analysis teaching: seminar-base tion requirement	soidal signals, expect the soid signals and soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals, expected are soid signals, expected are soid signals, expected are soid signals. The soid signals are soid signals, expected are soid signals, expected are soid signals, expected are soid signals, expected are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals. The soid signals are soid signals	ponentia e power nce beha amplitu	l oscill viour de and	ation phase re					
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4 5	Basic fe Basic ele System of Dynamic Complet Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of Lecture, Participal Formal: Content:	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, l cuits, resonant function, fre filters analysis teaching: seminar-base tion requirement Non Elec	soidal signals, expect the soid signals and soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals, expected are soid signals, expected are soid signals, expected are soid signals. The soid signals are soid signals, expected are soid signals, expected are soid signals, expected are soid signals, expected are soid signals. The soid signals are soid signals are soid signals are soid signals are soid signals. The soid signals are soid signals. The soid signals are soid signals	ponentia e power nce beha amplitu	viour de and	ation phase re	rse	63 or 106.	5)		
4 5	Basic fe Basic ele System of Dynamic Complet Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of Lecture, Participal Formal: Content:	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, l cuits, resonant function, fre filters analysis teaching: seminar-base tion requirement Non Elect assessment:	ed teaching with ents:	ponentia e power nce beha amplitue exercises	viour de and	phase reical coun	rse ronics (10				
4 5 6	Basic fe Basic ele System of Dynamic Complet Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier Forms of Lecture, Participar Formal: Content: Forms of Written	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, cuits, resonance function, fre filters analysis teaching: seminar-base tion requirement Non Elect assessment: examination,	Assification: static soidal signals, expect rent power, active Nyquist plot at circuits, resonal quency response, ed teaching with ents: The circuit Engineerin combination examples and the static and the static are combination examples as a static are a	ponentia e power nce beha amplitue exercises	viour de and	phase reical coun	rse ronics (10			on	
5	Basic fe Basic ele System of Dynamic Complet Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of Lecture, Participa Formal: Content: Forms of Written Prerequis	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, cuits, resonant function, fre filters analysis teaching: seminar-base tion requirement Non Elect assessment: examination, site for the awa	soidal signals, experience rent power, active Nyquist plot at circuits, resonar quency response, ed teaching with ents: The ctrical Engineering combination example of credit points:	ponentia e power nce beha amplitue exercises	viour de and	phase reical coun	rse ronics (10			on	
4 5	Basic fe Basic ele System of Dynamic Complex Periodic Impedar Reactive Three-pl Frequen RLC cir Transfer Passive Fourier of Lecture, Participar Formal: Content: Forms of Written Prerequis Module	ature: ectrical engin term, linearity c systems, cla x quantities e signals, sinus nce, admittance e power, appa hase current cy response, l cuits, resonant function, fre filters analysis teaching: seminar-base tion requirement Non Elect assessment: examination, site for the awa examination	Assification: static soidal signals, expect rent power, active Nyquist plot at circuits, resonal quency response, ed teaching with ents: The circuit Engineerin combination examples and the static and the static are combination examples as a static are a	ponentia e power nce beha amplitue exercises g (1070 mination	viour de and or 107	phase resical courses	rse ronics (10			on_	

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Joachim Waßmuth
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Embedded Systems										
Identification Workload: number:		Credits: Study		Study	semester:		Frequency of the offer		Duration:	
			5	6th sem.			Annual (Summer)		1 sem.	
1 Course:		Pl	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
Lecture		60	60 students 30 students		2	SCH	30	h	45	h
Tuition in	seminars	30			1	SCH	15	h	22.5	h
Exercise		20 students			0	SCH	0	h	0	h
Practical or seminar		15	15 students		1	SCH	15	h	22.5	h
Supervise	d self-study	60	50 students		0	SCH	0	h	0	h
,	Course: Lecture Tuition in Exercise Practical of	Ification workload: Iso h Course: Lecture Tuition in seminars Exercise Practical or seminar Supervised self-study	Fractical or seminar Supervised self-study Workload: 150 h Course: Pl. Lecture 60 Tuition in seminars 30 Exercise 20 Practical or seminar 15	ification workload: Credits: 150 h Course: Planned group size Lecture 60 students Tuition in seminars 30 students Exercise 20 students Practical or seminar 15 students Supervised self-study 60 students	ification workload: Credits: Study fer: 150 h 5 6th set Course: Planned group sizes Lecture 60 students Tuition in seminars 30 students Exercise 20 students Practical or seminar 15 students Supervised self-study 60 students	ification er: Workload: Credits: Study semester 150 h 5 6th sem.	ification er: Workload: Credits: Study semester: 150 h 5 6th sem.	ification er: Workload: Credits: Study semester: Frequency offer Annual (Summer)	ification er: Workload:	ification er: Workload: Credits: Study semester: Frequency of the offer Annual (Summer) 1 sem.

2 Learning outcomes/competences:

Students

- name and explain the different hardware concepts on which common embedded systems are based.
- explain the underlying hardware technologies, name advantages and disadvantages and evaluate the applicability for various practical problems.
- implement combinatorial and sequential function blocks in a synthesis language (e.g. VHDL) and use common toolchains to bring the synthesised functions to a target hardware (e.g. FPGA).
- develop a complex logic component according to specifications based on the previously developed function modules.
- evaluate algorithms with regard to their implementability in hardware or software (hardware/software co-design).
- explain design concepts for the hardware-related processing of discrete and continuous signals.
- distinguish the parallel design of algorithms for the hardware synthesis from conventional programming.
- compare their synthesis results with those of the other students and discuss differences in small groups.

3 Contents:

- Introduction to the topic of embedded systems (reactive, transforming systems, etc.)
- Classification of embedded hardware (microcontrollers, microprocessors, FPGAs, SoCs, etc.)
- Hardware technologies for the implementation of digital logic (SPLDs, CPLDs, FPGAs, ASICs)
- Repetition of combinatorial and sequential logic (pipelining etc.)
- Concepts of reliability, efficiency, hard and soft real time
- Hardware description languages (synthesis languages such as VHDL, VERILOG) compared to programming languages
- Introduction to VHDL
- Implementation of combinatorial and sequential logic components such as adders, multiplexers, automata, etc. in VHDL and their synthesis for an FPGA
- Synchronisation of the communication of asynchronous systems (one-synchronisation, metastability)
- Implementation of simple bus systems

	- Aspects of ha	rdware/software co-design					
	- Control of me	echatronic systems such as robots					
4	Forms of teaching	g;					
	Lecture, semina	r-based teaching, practical course					
5	Participation requirements:						
	Formal: None						
	Content:	Basic knowledge in the fields of digital technology, programming and computer architectures					
		Modules:					
		1045 Digital Electronics II;					
		1070 Digital Electronics I;					
		1104 Computer Science 1					
6	Forms of assessm						
		ation, combination examination or oral examination					
7		ne award of credit points:					
		ation pass and course assessment					
8	Application of the	e module (in the following study programmes)					
	Electrical Engin	neering (B.Eng.), Engineering Computer Sciences (B.Eng.), Mechatronics (B.Sc.) and					
		neering and Management (B.Sc.)					
9	_	grade for the final grade:					
	according to BR	RPO					
10	Module Officer:						
	Prof. Dr. rer. na	t. Axel Schneider					
11	Other information	n:					
	Literature will b	be announced at the beginning of the course.					
12	Language:						
	German						

Fini	te Element	Methods							FEM			
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duratio	on:		
1094	4	150 h	5	4th o	r 6th se	em.	Annual (Summer	·)	1 sem.			
1	Course:	1	Planned group siz	es	Scope);	Actual of time / cl	assroom	Self-stud	ly		
	Lecture		60 students		2	SCH	30	h	45	h		
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h		
	Exercise		20 students		0	SCH	0	h	0	h		
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h		
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h		
2	Learning	outcomes/comp	petences:		•	•	•	•	•	*		
	Understa	and the finite e	lement method for	structi	aral and	l temper	ature calci	ılations, b	e able to b	aild FEM		
	models v	with load defir	nition and boundar	y cond	itions, i	nterpret	results, a	nalyse cor	nponents v	vith FEM		
	program	s in terms of d	leformation, stress	, tempe	erature							
3	Contents:											
	- Areas	of application	of the FEM									
			e element method									
		etry, nodes, el										
		-	formation approach	h								
			atrix, total stiffnes		X							
		lary condition:										
		•	m potential energy	1								
		isc and solid e										
	- Isopar	ametric eleme	nt formulation									
	Forms of	- Numerical integration Forms of teaching:										
4		-										
	Lectures	-	d practical course									
5	Participat	, exercises and ion requiremen	ts:									
	Participat Formal:	, exercises and ion requiremen	ts:									
5	Participat Formal: Content:	, exercises and ion requiremen None Com	ts:	ential a	and inte	gral cal	culus					
	Participat Formal: Content: Forms of	, exercises and ion requirement None Com assessment:	ts: e puter skills, differ			<u> </u>						
5	Participat Formal: Content: Forms of Written	, exercises and ion requirement None Com assessment: or oral examir	ts: e puter skills, differnation; in each case			<u> </u>		performai	nce			
5	Participat Formal: Content: Forms of Written of Prerequis	, exercises and ion requiremen None Com assessment: or oral examirite for the awar	ts: puter skills, differentiation; in each cased of credit points:	e with 1	prelimi	nary exa		performar	nce			
5 6 7	Participat Formal: Content: Forms of Written of Prerequis Module	, exercises and ion requirement None Com assessment: or oral examinite for the awar examination p	puter skills, differentiation; in each cased of credit points: bass with prelimina	e with pary exa	prelimi minatio	nary exa		performai	nce			
5	Participat Formal: Content: Forms of Written of Prerequis Module Application	, exercises and ion requirement None Com assessment: or oral examinite for the awar examination pon of the moduli	puter skills, differention; in each cased of credit points: bass with preliminate (in the following s	e with pary exa	prelimi minatio	nary exa	nmination	performar	nce			
5 6 7 8	Participat Formal: Content: Forms of Written of Prerequis Module Application Engineer	, exercises and ion requirement None Com assessment: or oral examinite for the awar examination pon of the moduling Computer	puter skills, differention; in each case d of credit points: bass with preliminate (in the following ser Sciences (B.Eng.	e with pary exa	prelimi minatio	nary exa	nmination	performar	nce			
5 6 7	Participat Formal: Content: Forms of Written of Prerequis Module Application Engineer Importance	, exercises and ion requirement None Com assessment: or oral examinite for the awar examination pon of the modularing Computer ce of the grade	puter skills, differention; in each cased of credit points: bass with preliminate (in the following s	e with pary exa	prelimi minatio	nary exa	nmination	performar	nce			
5 6 7 8	Participat Formal: Content: Forms of Written of Prerequis Module Application Engineer Important accordin	, exercises and ion requirement None Com assessment: or oral examinite for the awar examination pon of the modularing Computer ce of the grade g to BRPO	puter skills, differention; in each case d of credit points: bass with preliminate (in the following ser Sciences (B.Eng.	e with pary exa	prelimi minatio	nary exa	nmination	performai	nce			
5 6 7 8	Participat Formal: Content: Forms of Written of Prerequis Module Application Engineer Important accordin Module O	, exercises and ion requirement None Commassessment: or oral examinite for the awar examination point on of the modularing Computer ce of the grade g to BRPO Officer:	puter skills, differention; in each cased of credit points: bass with preliminate (in the following strangers) Sciences (B.Eng. for the final grade:	e with pary exa	prelimi minatio	nary exa	nmination	performar	nce			
5 6 7 8 9	Participat Formal: Content: Forms of Written of Prerequis Module of Application Engineer Important accordin Module Of Prof. Dr.	, exercises and ion requirement None Community or oral examination properties of the modularing Computer Comput	puter skills, differention; in each cased of credit points: bass with preliminate (in the following strangers) Sciences (B.Eng. for the final grade:	e with pary exa	prelimi minatio	nary exa	nmination	performar	nce			
5 6 7 8	Participat Formal: Content: Forms of Written of Prerequis Module of Application Engineer Importance accordin Module of Prof. Dr. Other info	, exercises and ion requirement None Commassessment: or oral examinite for the aware examination point of the modularing Computer of the grade g to BRPO Officer: Jeng. Rolf Natormation:	puter skills, differention; in each case d of credit points: bass with preliminate (in the following ser Sciences (B.Eng. for the final grade:	e with pary exactions of the study property and M	prelimi minatic ogramn Mechati	nary exa on nes) ronics (I	nmination	performar	nce			
5 6 7 8 9	Participat Formal: Content: Forms of Written of Prerequis Module of Application Engineer Importance accordin Module of Prof. Dr. Other info	, exercises and ion requirement None Com assessment: or oral examination properties of the modularing Computer of the grade grade grade and the grade grade grade and the grade grad	puter skills, differention; in each cased of credit points: bass with preliminate (in the following strangers) Sciences (B.Eng. for the final grade:	e with pary exactions of the study property and M	prelimi minatic ogramn Mechati	nary exa on nes) ronics (I	nmination	performar	nce			

	der and Di	versity: Succe	ss Factors for Co	ompanies	5				GUD	
Iden num	tification ber:	Workload:	Credits:	Study	semes	ter:	Frequenc offer	y of the	Durati	on:
313		150 h	5	5th s	em.		Annual (Winter)		1 sem	
1	Course:		Planned group s	sizes	Scop	e	actual c time / c teachin	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	_	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning The stud	outcomes/comp	petences:						,	
		 inde the b are a as ge for p are f dive 	ensitised to hum pendently recogn pusiness environable to independe ender mainstream professional pract familiar with selectives resity managementation	nise sterement. ently collining and tice. ected theat and, but	lect rel divers ories a uilding	evant infaity mana	formation agement a baches in tare able to	on establi on to asse he current o develop	shed conc ss their rel discourse conceptua	epts such evance on d ideas
	Contents									
3	Contents	 Definequal Leganger Subjection Possible according reso Con 	nitions and delinal opportunities (and bases and political Equal Treatmective and social ible approaches unt in selected a surces) sept for the sustate studies and apprice	e.g. dive tical influent Act leading values, for takin reas of build bui	rsity muences t (Germattitud diversines dive	(e.g. EU nan abbr es and p rsity cha s (marke	ent, gende J Anti-Dis reviation: rejudices racteristic ting, prod	er mainstre cerimination (AGG)) in the con s (e.g. ger uct develo	eaming) on Directiv text of div nder and ag opment, hu	re). ersity ge) into uman
3	Forms of	 Define qualities Leganger Subjection Possible according Contraction Case practice 	al opportunities (al bases and political Equal Treatical ective and social ible approaches unt in selected a urces) cept for the sustal e studies and app	e.g. dive tical influent Act I values, for takin reas of b tinable in lication	rsity muences t (Germattitud attitud ng divenusines ntroduc examp	nanagem (e.g. EU nan abbr es and p rsity cha s (marke ction of h les from	ent, gende J Anti-Dis reviation: rejudices racteristic ting, producting, producting nolistic dis- business	er mainstre cerimination AGG)) in the con s (e.g. ger uct develon versity ma	eaming) on Directiv text of div nder and ag opment, hu	re). ersity ge) into uman
	Forms of Lecture,	 Define qualities Leganger Subjection Possible according Contraction Case practice 	al opportunities (al bases and political Equal Treatical Equal Treatical Equal Treatical Equal Treatical Equal Treatical Equal Equa	e.g. dive tical influent Act I values, for takin reas of b tinable in lication	rsity muences t (Germattitud attitud ng divenusines ntroduc examp	nanagem (e.g. EU nan abbr es and p rsity cha s (marke ction of h les from	ent, gende J Anti-Dis reviation: rejudices racteristic ting, producting, producting nolistic dis- business	er mainstre cerimination AGG)) in the con s (e.g. ger uct develon versity ma	eaming) on Directiv text of div nder and ag opment, hu	re). ersity ge) into uman

6	Forms of assessment:
	Term paper, written examination, project work or oral examination
7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Applied Mathematics (B.Sc.), Apparative Biotechnology (B.Sc.), Electrical Engineering (B.Eng.),
	Computer Engineering (B.Eng.), Mechanical Engineering (B.Eng.), Mechatronics (B.Sc.), Renewable
	Energies (B.Eng.) and Industrial Engineering and Management (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Andrea Kaimann
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Higl	n-Frequenc	y Electronics							HFE	
	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequency	of the	Duratio	on:
110	1	150 h	5	5th s	sem.		Annual (Winter)		1 sem.	
	Course:	1	Planned group s	izes	Scop	e	Actual c time / cl teaching	assroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		1	SCH	15	h	22.5	h
		ed self-study outcomes/com	60 students		0	SCH	0	h	0	h
		n the state of n boundary co	"wave matching anditions,	g" of li	near hi	gh-frequ	ency syste	ems and o	lesign the	necessar
	systen - explai	n boundary co n components		_		_				
3	Contents: - Four-p - Leade - Shaft a - Standa - The Si - Compo	n boundary con components coole theory for rship theory adjustment ardised power mith Chart onents of high	onditions,	of linear	ronics a	and selec				
	Contents: - Four-I - Leade: - Shaft: - Standa - The Si - Comp - Labora Forms of Lecture,	n boundary con n components boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base	waves / scattering frequency electrics in small groups	of linear g paran	r circuit	and selection	et them for			
ı	Contents: - Four-I - Leade: - Shaft: - Standa - The Si - Comp - Labora Forms of Lecture,	boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base tion requirement Non Math	waves / scattering of teaching, laborates: d teaching, laborates: e nematics 1 (1146)	or 1147	r circuit neters	and selections in small	t them for 1 groups.			
ļ 5	System - explain - explain - explain - explain - Four-Fill - Leader - Shaft are - Standar - The Standar - The Standar - Labora - Labora - Forms of Lecture, Participat Formal: Content:	n boundary con n components boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base tion requirement Non Mather Election assessment:	waves / scattering of the description of the descri	of linear parameters or 1147 g 1 (107)	recircuit neters	s in smal	l groups.	the specif	ic applicat	
1	System - explain Contents: - Four-p - Leade - Shaft a - Standa - The Si - Comp - Labora Forms of Lecture, Participat Formal: Content: Forms of Written Prerequise	n boundary con n components boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base tion requirement Non Mattager Seminar Sem	waves / scattering the description of the description of waves / scattering the sin small groups the description of the descrip	of linear g param ronics atory proof or 1147 g 1 (107) as with	r circuit neters acticals 7) and 2 71 or 10	s in smal	l groups.	the specif	ic applicat	
5	System - explain Contents: - Four-p - Leade - Shaft a - Standa - The So - Comp - Labora Forms of Lecture, Participat Formal: Content: Forms of Written Prerequis Module	boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base tion requirement Non Matlelec assessment: or oral examinate for the awar examination processing the components of the awar examination processing the components of the components o	waves / scattering of the description of the descri	of linear parameters of 1147, g 1 (107) ase with	r circuit neters	s in smal	l groups.	the specif	ic applicat	
3 3 4 5 7 8	System - explain Contents: - Four-F - Leade: - Shaft a - Standa - The Si - Compinate of Lecture, - Participate of Formal: - Content: Forms of Written - Prerequise of Module - Application of Electrical	boole theory for rship theory adjustment ardised power mith Chart onents of high atory practical teaching: seminar-base tion requirement Non Matl Electory or or all examination pon of the modulal Engineering	waves / scattering the description of the description of waves / scattering the sin small groups the description of the descrip	or 1147 g 1 (107) se with mary exagstudy peering (recircuit neters acticals 7) and 2 71 or 10 prelimination	s in smal	l groups. or 1153). 2 (1075)	performar	ic applicat	ion

10	Module Officer:
	Prof. DrIng. Rüdiger Schultheis
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Identi numb	ification									
num		Workload:	Credits:	Stud	y semest	er:	Frequency	of the	Duratio	on:
1102		150 h	5	4th	or 6th se	em.	Annual (Summer	•)	1 sem	
1	Course:		Planned group s	sizes	Scope	e	Actual of time / cl	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	etences:		-	1			1	
	students possess	to solve techn fundamental k	es. They are able sical and econom nowledge to dev ompetence throu	nic tasks elop int	s in a res	sults- an linary ta	d action-oasks within	riented mattheir com	anner. The pany. The	student
3	Contents	•								
	Pro - Sig - Prii - And - Ided - Pro	duction nificance to in nciple and inte alysis of perfor ntifying and el cess orientatio	dustry raction of processe iminating waste on and overprodu n and workplace	ss elemos s	ents	al Engin	eering, Le	an Manag	menet and	l Lean
4	Forms of	teaching:	1	<u> </u>		aal aaur	20.0			
5		tion requirement	d teaching with e	ACICISE	s, practi	cai cour	se			
J	Formal:	None)							
	Content:	assessment:	2							
6			ation exam, perf	ormanc	e exam,	project	work or o	ral exam		
7	_		d of credit points: ass and course a	ssessme	ent					
8	Applicati		e (in the following			nes)				
9			for the final grade:							
,	_	g to BRPO	.o. are man grade.							
10	Module (Officer:	and a							
		Ing. Franz Feormation:	eyerapend							
1.1	I IIhar int	ormanon.								
11		re will be anno	unced at the beg	ginning	of the co	ourse.				

Sale	s and Dist	Hoution Mana	agement 1 – Indus	striai Go	ous M	arkeung			IGM	
Ident numl	rification per:	Workload:	Credits:	Study	semes	ter:	Frequenc	y of the	Duratio	on:
1275	5	150 h	5	5th s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group s	sizes	Scop	e	Actual time / c	lassroom	Self-stud	ly
	Lecture		60 students		3	SCH	45	h	67.5	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	-	ed self-study	60 students		0	SCH	0	h	0	h
2	_	outcomes/com	petences: cture, students wi							
	•		contents of indus							edge o
	•	apply the sp examples an results. critically refl recapitulate t	ecial features and case studies ar ect on the special he course content form learning gro	nd tasks nd indep I features indepen	of indented and taken the sand taken ta	ustrial g ly solve asks of in and deep	goods man the associatustrial goen their kn	ciated task coods mark nowledge	selected page selected present selected present selecting.	sent th
	Contents 1. 2. 3.	apply the sp examples an results. critically refl recapitulate t Ideally, they : Building blo Type-specifi (b) parts and Cross-type a business-to-l	ecial features and case studies are ect on the special he course content	d tasks and indep l features indepen oups whi , especia selected single un	of indicendent sand tadently chast	ustrial g ly solve asks of in and deep through racterisa ms: The plants, (the associated the as	cketing to ciated tash coods mark nowledge tire period dustrial go of (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
	Contents 1. 2. 3. Forms of Lecture,	apply the sp examples an results. critically refl recapitulate t Ideally, they Building blo Type-specifi (b) parts and Cross-type a business-to-liteaching: seminar-base	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field	d tasks and independent indepe	of indicendents and tadently ch last	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (tion of incorrection of systems ole compe	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
1	Contents 1. 2. 3. Forms of Lecture,	apply the sp examples an results. critically refl recapitulate t Ideally, they Building blo Type-specifi (b) parts and Cross-type a business-to- teaching: seminar-base tion requireme	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field	d tasks and independent indepe	of indicendents and tadently ch last	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (tion of incorrection of systems ole compe	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
ļ	Contents 1. 2. 3. Forms of Lecture, Participa Formal:	apply the sp examples an results. critically refl recapitulate t Ideally, they Building blo Type-specifi (b) parts and Cross-type a business-to- teaching: seminar-base tion requireme	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) supproaches for the business field	d tasks and independent indepe	of independent sand tadently characterists, (d) ion of sand tage.	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
ļ	Contents 1. 2. 3. Forms of Lecture, Participal Formal: Content:	apply the spexamples an results. critically reflected recapitulate to Ideally, they Building bloom Type-specific (b) parts and Cross-type a business-to-lecteaching: seminar-base tion requirements Normal Knowledge Norm	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field	d tasks and independent indepe	of independent sand tadently characterists, (d) ion of sand tage.	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
1	Contents 1. 2. 3. Forms of Lecture, Participal Formal: Content: Forms of	apply the spexamples an results. critically reflected recapitulate to Ideally, they Building bloom Type-specific (b) parts and Cross-type as business-to-lecteaching: seminar-base tion requirements Norman Knows Substitute of the specific of the speci	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) supproaches for the business field	d tasks and independent indepe	of independent sand tadently characterists, (d) ion of sand tage.	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
5	Contents 1. 2. 3. Forms of Lecture, Participar Formal: Content: Forms of Written	apply the sp examples an results. critically refl recapitulate t Ideally, they Building blo Type-specifi (b) parts and Cross-type a business-to- teaching: seminar-base tion requireme Nor assessment: examination	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field ed teaching with a semble ed t	d tasks and independent features independent foups which independent foups which is a selected single under realisate exercises fodule March independent foups which is a selected for the feature of the	of independent sand tadently characterists, (d) ion of sand tage.	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
3 4 5 6	Contents 1. 2. 3. Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise	apply the spexamples an results. critically refl recapitulate to Ideally, they Building blood Type-specific (b) parts and Cross-type as business-to-liteaching: seminar-base tion requirement Norway Known	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field ed teaching with each teaching with each teach t	d tasks and independent features independent foups which independent foups which is a selected single under realisate exercises fodule March independent foups which is a selected for the feature of the	of independent sand tadently characterists, (d) ion of sand tage.	ustrial g ly solve sks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected per set and pre seting. through selecting through selecting selecting. It is set and input in selection and input in selection selection.	sent th
5	Contents 1. 2. 3. Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module	apply the spexamples an results. critically refl recapitulate to Ideally, they Building blood Type-specific (b) parts and Cross-type as business-to-life teaching: seminar-based tion requiremed Normal Seminarion Semination Seminati	ecial features and case studies are ect on the special he course content form learning growth assemblies, (c) spproaches for the business field ed teaching with each teaching with each teach t	d tasks and independent indepe	of independent and taken the sand ta	ustrial g ly solve asks of in and deep through racterisa ms: The plants, (sustainab	the associated and the associated attention of the court the endition of incompany the competition of the co	dustrial goof (a) raw	selected pages and presenting. through self of study.	sent th

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. Dr. rer. oec. Klaus Rüdiger
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Com	nputer Scie	nce 1 – Impo	erative Programmi	ing					IN1	
Ident numb	rification per:	Workload:	Credits:	Study	y semes	ter:	Frequency	y of the	Duratio	on:
1106	5	150 h	5	1st s	em.		Annual (Winter)		1 sem	
1	Course:	1	Planned group s	sizes	Scop	e	Actual of time / co	lassroom	Self-stud	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	The studindepend understa	dently created of the created and C programming and care care care care care care care care	le to present algo e small programs rammes written b in apply them in p ning languages an	mes using organical message of the contraction of t	ng the s. Stu ning. S	progra dents ki Students	mming land now the land are famili	nguage C basic eler ar with th	They are nents of i	e able t imperativ
	- For Tur - Alg - The - Bas - Exp - Cor - Fur	ing machine corithms and programmi ic data types pression and atrol structur	res of imperative p es and recursions	Neuma algorith d its stan types and	nn arch ms dard li d opera	braries tors)			ic,
4		teaching:	sed teaching with 6	evercises	pract	ical com	rce			
5		tion requireme		CACICISCS	s, pract	icai coui	130			
-	Formal:	No								
	Content:	No								
6	Forms of	assessment:								
			, combination exa	minatior	ı, perfo	rmance	exa <u>mi</u> nati	on or oral	examination	on
7	_		ard of credit points:							
			pass and course a							
8			lule (in the following ology (B.Sc.) and		-					
9			e for the final grade:		OHICS	(D.SC.)				
9		g to BRPO	e for the final grade.							
10	Module (
10		. rer. nat. Ma	artin Hülse							
11	Other inf	ormation:								

12 Language:
German

	tification	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duratio	n:
num		1 70 1	_				offer			
1110	0	150 h	5	2nd s	sem.		Annual (Summer))	1 sem.	
1	Course:	1	Planned group s	izes	Scope	e	Actual co		Self-stud	у
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students	20 students		SCH	0	h	0	h
		or seminar	15 students		1	SCH	15	h	22.5	h
2		ed self-study outcomes/com	60 students		0	SCH	0	h	0	h
	Lagnarata		CONT. 1 1							
3	their eff	iciency.	SW development	and are	able to	o assess	the progra	mmes de	veloped in	terms of
3	Contents Teachin - Ab - Contents - Mo - Mo - Un - Bri	: g content: stract data typ ncepts of obje eritance) odelling langua it tests and tes ef introduction	e ct-oriented progra	amming	(abstra	action, da	ata encapsi	ılation, po		
	Contents Teachin - Ab - Contents - Mo - Un - Bri - Alg	eritance) codelling languatit tests and tested introductions or teaching:	e ct-oriented progra age UML st-driven SW deve n to SW engineer	amming elopmen ing (idio	(abstra t oms, de	esign pat	ata encapsu	ılation, po		
1	Contents Teachin - Ab - Cor inh - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal:	estion requirement.	e ct-oriented progra age UML at-driven SW deven to SW engineer lata structures ad teaching with ents:	amming elopmen ing (idio	(abstra t oms, de	esign pat	ata encapsu	ılation, po		
45	Contents Teachin - Ab - Contents - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal: Content:	g content: stract data typ ncepts of obje eritance) odelling langua it tests and test ef introductio gorithms and of teaching: seminar-base tion requirement Non Con assessment:	e ct-oriented progra age UML st-driven SW deve n to SW engineer data structures ed teaching with ents: e nputer Science 1	amming elopmen ing (idio	(abstra t oms, de	esign patr	ata encapsu terns, archi	tlation, po	olymorphis	m,
5	Contents Teachin - Ab - Contents - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis	g content: stract data typ ncepts of obje eritance) odelling langua it tests and test ef introduction gorithms and of teaching: seminar-base tion requiremer Non Con assessment: examination, site for the awar	e ct-oriented progra age UML at-driven SW deven to SW engineer lata structures ad teaching with ents:	amming elopmen ing (idio	t oms, de	esign patr	ata encapsu terns, archi	tlation, po	olymorphis	m,
3 4 5 7 8	Contents Teachin - Ab - Contents Teachin - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat	g content: stract data typ ncepts of obje eritance) odelling langua it tests and test ef introductio gorithms and of teaching: seminar-base tion requirement Non Com assessment: examination, site for the awar examination j ion of the modu ive Biotechno	e ct-oriented progra age UML at-driven SW deve n to SW engineer data structures ad teaching with e nts: e nputer Science 1 combination exar ad of credit points: pass and course as ale (in the following alogy (B.Sc.) and	elopmening (idio	(abstrate toms, de	esign patracal cour	ata encapsu terns, archi	tlation, po	olymorphis	m,
4 5 7 8	Contents Teachin - Ab - Contents Teachin - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat Importan accordin	g content: stract data typ ncepts of obje eritance) odelling langua it tests and test ef introduction gorithms and of teaching: seminar-base tion requirement Non Con assessment: examination, site for the awar examination properties of the grade introduction of the grade	e ct-oriented progra age UML at-driven SW deve n to SW engineer data structures ad teaching with e nts: e nputer Science 1 combination exar ad of credit points: pass and course as ale (in the following	elopmening (idio	(abstrate toms, de	esign patracal cour	ata encapsu terns, archi	tlation, po	olymorphis	m,
4 5 6	Contents Teachin - Ab - Contents Teachin - Ab - Contents - Mo - Un - Bri - Alg Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat Importan accordir Module O Prof. Dr	g content: stract data typ ncepts of obje eritance) odelling langua it tests and test ef introduction gorithms and of teaching: seminar-base tion requirement Non Con assessment: examination, site for the awar examination properties of the grade introduction of the grade	e ct-oriented progra age UML at-driven SW deve n to SW engineer data structures ad teaching with e nts: e nputer Science 1 combination exar ad of credit points: pass and course as ale (in the following alogy (B.Sc.) and for the final grade:	elopmening (idio	(abstrate toms, de	esign patracal cour	ata encapsu terns, archi	tlation, po	olymorphis	m,

12 Language:
German

	ification	Workload:	Credits:	Stud	y semes	ter:	Frequency	y of the	Duratio	on:
numb 1316		150 h	5	3rd	sem.		offer Annual (Winter)		1 sem.	
1	Course:		Planned group s	izes	Scop	e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		1	SCH	15	h	22.5	h
2	•	ed self-study outcomes/com	60 students		0	SCH	0	h	0	h
3	systems	lents are able	vork out and evalute to design, build a						buted sens	or-moto
	- Cor - Dis - Into - Ind - De - Intr - Bas - Bas - Imp	tributed systement of Thingustry 4.0 velopment systemeduction to vesics of electrosics of prographementation plication examples.	ameworks for the incess. Basics, archites (IoT) in the indestems for physical working with IDEs nics for IoT mming sensor-moof simple sensor-mples of machine	tectures ustrial e compu s otor unit	, bus sy environ ating (II as nits	vstems, pment DEs)	orotocols, 1	middlewa		
1		teaching: seminar-base	ed teaching with e	xercise	s, pract	ical cour	rse			
5		tion requirement Nor	nts:							
5	Forms of	assessment:	combination exar	ninatio	n, perfo	rmance	examinatio	on or oral	examinatio	on
7	Prerequis	ite for the awa	rd of credit points: pass and course as							
3			ile (in the following blogy (B.Sc.) and							
)	accordin	g to BRPO	for the final grade:							
10	Module (rtin Uiilaa							

Inno	vation and	Change Ma	nagement						IVM	
Ideni numl	ification per:	Workload:	Credits:	Study	y semes	ter:	Frequenc offer	y of the	Durati	on:
1113	3	150 h	5	5th s	sem.		Annual (Winter))	1 sem	ı .
1	Course:	1	Planned group s	sizes	Scop	e	Actual time / c teachin	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	•	ed self-study outcomes/cor	60 students		0	SCH	0	h	0	h
3	the stud	ents to act : y operates.	that can be impler independently in							
	- Innova - Innova - Produa - Changa - Methoda - Coope	ation process ation process of management of management of management of management of management of management of management of management of management	novation managements the early phases (pent and intellectual ent, boundary concernent of innovation and changiver of innovation	(emergenorocess of property ditions a on and complete teams	control, ty right nd succ hange	success	assessme	nt)		
4		teaching: seminar-bas	sed teaching							
5		tion requirement No	ents:							
6	Forms of	assessment:	ination exam, perf	ormance	e exam	, project	work or o	oral exam		
7	_		ard of credit points: pass and course a	ıssessme	nt					
8	Applicati	on of the mod	lule (in the following) and Industrial Er	g study p	rogramı		ment (B.S	c.)		
0			e for the final grade:		0		(2.0	/		
9										
		g to BRPO								
9	accordin Module (g to BRPO	Feyerabend							

	grated Prod	duct Developn	nent						IP	
Ident	ification per:	Workload:	Credits:	Study	y semes	ter:	Frequency	y of the	Durati	on:
1232	2	150 h	5	4th o	or 6th s	em.	Annual (Summe	r)	1 sem	i.
1	Course:		Planned group s	sizes	Scop	e	Actual of time / conteaching	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	The stu develope are able	ment methods to work metho	and tools. They odically, systema odical developm	can sele atically a	ct and	apply the	ese metho	ds in a targ	geted man	ner. They
	function Idea ge evaluation	s, functional s neration/creation of alternation l development	ications/requirer tructure, vity process -> ve solutions, eva guidelines (e.g.	Overvluation p	iew of	methodires.	ds, discur	sive and	intuitive	methods,
4		teaching:	141	14						
	Lecture,	seminar-base	d teaching, pract	ical exe	rcises					
5	Lecture, Participa	seminar-based	ts:	ical exei	rcises					
	Lecture, Participal Formal:	seminar-based tion requiremen None	ts:	ical exer	rcises					
	Lecture, Participal Formal: Content: Forms of	seminar-based tion requiremen None None assessment:	ts:				avaninti.	on or oral	ovominoti.	000
5	Lecture, Participal Formal: Content: Forms of Written Prerequis	seminar-based tion requiremen None None assessment: examination, on the first for the award to the first for the award to	ts: combination exact of credit points:			rmance	examinatio	on or oral	examinati	on
5 6 7	Lecture, Participal Formal: Content: Forms of Written Prerequis Module	seminar-based tion requiremen None None assessment: examination, out of the award examination p	ts: combination exact of credit points: ass	minatior	ı, perfo		examination	on or oral	examinati	on
5 6 7	Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat	seminar-based tion requirement None None assessment: examination, on the form of the modulive Biotechnological None None None None None None None None	ts: combination exact of credit points: ass e (in the following togy (B.Sc.), Eng	minatior g study pr	n, perfo	nes)				
5 6 7 8	Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.) Importan	None None assessment: examination proportion of the modulive Biotechnol and Mechatroce of the grade	ts: combination exact of credit points: ass e (in the following togy (B.Sc.), Eng	minatior g study pr gineering	n, perfo	nes)				
5 6 7 8	Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.) Importan accordin	seminar-based tion requirement None None None assessment: examination, or site for the award examination proportion of the modulive Biotechnol and Mechatro ce of the grade and to BRPO Officer:	ts: combination exact dof credit points: ass the (in the following logy (B.Sc.), Engonics (B.Sc.) for the final grade:	minatior g study pr gineering	n, perfo	nes)				
5 6 7 8 8	Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.) Importan accordin Module of Prof. Dr	seminar-based tion requirement None None None assessment: examination, of the first properties of the grade o	ts: combination exact dof credit points: ass the (in the following logy (B.Sc.), Engonics (B.Sc.) for the final grade:	minatior g study pr gineering	n, perfo	nes)				
5 6 7 8	Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.) Importan accordin Module O Prof. Dr Other inf	seminar-based tion requirement None None None assessment: examination, on the formation of the modulive Biotechnol and Mechatro ce of the grade and to BRPO Officer: a Ling. Klaus Domation: re will be annother the second of the modulive Biotechnol of the grade and the second th	ts: combination exact dof credit points: ass the (in the following logy (B.Sc.), Engonics (B.Sc.) for the final grade:	minatior g study pr gineering	n, perfo	nes) outer Sci				

1311 1	Course: Lecture Tuition in Exercise Practical Supervise Learning In relation compone production production products essential the field	ents of mechat on processes i . They confide step in overal of sensor tech f application	Planned group s 60 students 30 students 20 students 15 students 60 students cetences: stents listed belowered by the new centre of the students of the stent of the students	ow, the Frey canner, and ecessary. The stugn intelli	Scop 2 1 0 1 0 student selected designmeans dents igent s	SCH	assify an figure servelop senhods of deasic knowstems. The	contact lassroom g	ble for med ant for med sensor syste signal proce trends and	h h h h essential chatronic chatronic cms as an essing in d current
1311	Course: Lecture Tuition in Exercise Practical Supervise Learning In relation compone production products essential the field fields of	or seminars or seminar ed self-study outcomes/compon to the conents of mechaton processes i . They confide step in overal of sensor tecl fapplication	Planned group s 60 students 30 students 20 students 15 students 60 students etences: steents listed belowerence systems. In a targeted manently apply the near the system design the system des	ow, the Frhey can nner, and ecessary. The stugn intelli	Scop 2 1 0 1 0 student selected designmeans dents igent s	SCH SCH SCH SCH SCH scan clarand congrand degrand metiuse the beensor sys	Annual (Summe Summe Actual of time / c teaching 30 15 0 15 0 assify an figure servelop senhods of deasic knowstems. The	contact lassroom g h h h h h sors relevatescribing s vledge of s ey analyse	Self-stud 45 22.5 0 22.5 0 sensors as ble for med ant for med ensor systems signal process trends and self-students.	h h h h essential
2	Lecture Tuition in Exercise Practical Supervise Learning In relation componer production products essential the field fields of	or seminar ed self-study outcomes/compon to the conents of mechaton processes i . They confide step in overal of sensor tech	60 students 30 students 20 students 15 students 60 students etences: attents listed belowerence systems. The attence of the at	ow, the ε Γhey can nner, and ecessary . The stu gn intelli	2 1 0 1 0 studen a select d design means idents igent s	SCH SCH SCH SCH SCH scan clarand congrand degrand metiuse the beensor sys	time / c teaching 30 15 0 15 0 assify an figure ser velop sen hods of de asic knowstems. The	lassroom g h h h h d assess s assors suital assors relevates relevat	45 22.5 0 22.5 0 sensors as ble for mediant for median	h h h h essential
2	Exercise Practical Supervise Learning In relation componer production products essential the fields of	or seminar ed self-study outcomes/compon to the conents of mechaton processes i . They confide step in overal of sensor tech	30 students 20 students 15 students 60 students etences: tents listed belotronic systems. In a targeted manently apply the neall system design thoology to design	They can nner, and ecessary . The stu gn intelli	1 0 1 0 student selected designments igent s	SCH SCH SCH SCH ts can clar and congrand desand metuse the bensor sys	30 15 0 15 0 assify an figure ser velop sen hods of de asic knowstems. The	h h h h h d assess s asors suital asors relevate escribing s vledge of s ey analyse	22.5 0 22.5 0 sensors as ble for med ant for med sensor systems signal process trends and the systems of the	h h h essential chatronic chatronic chatronic cams as ar essing ir d current
2	Exercise Practical Supervise Learning In relation componer production products essential the field fields of	or seminar ed self-study outcomes/compon to the conents of mechaton processes i . They confide step in overal of sensor tech	20 students 15 students 60 students setences: stents listed belotronic systems. In a targeted manently apply the neall system design thoology to design	They can nner, and ecessary . The stu gn intelli	o 1 1 0 o student selected designments igent s	SCH SCH SCH scan clarand congrand design and design and metiuse the beensor sys	assify an figure ser velop sen hods of do asic knowstems. The	h h h d assess s asors suital ssors relevatescribing s vledge of s ey analyse	o 22.5 0 sensors as ble for med ant for med sensor systems signal process trends and	h h essentia chatronic ems as ar essing ir d curren
2	Supervise Learning In relation componer production products essential the field fields of	outcomes/compon to the conents of mechaton processes in They confide step in overal of sensor tech	15 students 60 students etences: stents listed belotronic systems. In a targeted manently apply the notall system design thoology to design	They can nner, and ecessary . The stu gn intelli	student selected designments igent s	sch	assify an figure ser velop sen hods of de asic knowstems. The	h h d assess sasors suital asors relevate escribing saveledge of seey analyse	sensors as ble for med ant for med sensor systems signal process trends and	h h essentia chatronic chatronic ems as ar essing ir d curren
2	Supervise Learning In relation componed production products essential the field fields of	outcomes/compon to the conents of mechaton processes in They confide step in overal of sensor tech	60 students betences: itents listed belotronic systems. To a targeted manently apply the notall system design thoology to design	They can nner, and ecessary . The stu gn intelli	student selected designmeans idents igent s	ts can cl t and con an and de s and met use the b ensor sys	assify an figure ser velop sen hods of de asic knowstems. The	h d assess sansors suital asors relevate escribing salvedge of sey analyse	sensors as ble for med ant for med sensor syste signal procest trends and	h essentia chatronic chatronic ems as ar essing ir d curren
2	Learning In relation componed products essential the field fields of	outcomes/compon to the conents of mechaton processes in They confide step in overal of sensor teels application	petences: atents listed belotronic systems. The atargeted manently apply the notall system design thoology to design	They can nner, and ecessary . The stu gn intelli	studen a select d desig means adents igent s	ts can cl t and con on and de s and met use the b ensor sys	assify an figure ser velop sen hods of de asic know stems. The	d assess s asors suital asors releving secribing solvedge of seey analyse	sensors as ble for med ant for med sensor syste signal proce trends and	essentia chatronic chatronic ems as ar essing ir d curren
	In relation componed production products essential the field fields of	on to the con ents of mechat on processes i . They confide step in overal of sensor tech f application	tents listed belot tronic systems. In a targeted man ently apply the no ll system design hnology to design	They can nner, and ecessary . The stu gn intelli	n select d desig means idents igent s	and congrand destand met use the beensor sys	figure ser velop sen hods of de asic knov stems. The	nsors suital sors relevant escribing solvedge of solvedge	ble for med ant for med sensor syste signal proce trends and	chatronic chatronic ems as an essing in d current
	applicati Sensor s Signal po theorem Sensor s Sensor e windowi Construct Integrati FPGA),	on of terms, ca ons, sensor ch ignal chain: rocessing and ignal processing rror correction ing, design and ction of techni- on levels, intel connectivity/n	ategorisation acc paracterisation (a conditioning, de ng: n, discrete-time p d implementation cal sensor system lligent sensors, in network connection	sign and processing of digitings: andirect/von	resolu realis ng of a tal filte	ation, sen ation of a nalogue s	sitivity, li malogue f ignals, sp	nearity) Tilters, AD Dectral anal	U/DAU, sa lysis/FFT,	ampling
	Forms of Lecture,	-	d teaching with o	computer	r exerc	ises, prac	ctical cour	rse		
		ion requirement	ts:							
_	Formal: Content:	Scier Mech	trical Engineerin nces, 1070 Indus hatronics. 1067 a neering and Mar	trial Eng and 1069	gineeri Engir	ng and M neering C	anagemer omputer S	nt), Electro Sciences, 1	onics (1063	3
0		assessment:	combination exa							

7	Prerequisite for the award of credit points:
	module examination pass and course assessment
8	Application of the module (in the following study programmes)
	Electrical Engineering (B.Eng.), Engineering Computer Sciences (B.Eng.), Mechatronics (B.Sc.) and
	Industrial Engineering and Management (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Joachim Waßmuth
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

r 1		Management/N		G. 1			Г	6.4	IMM	
den ium	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency offer	of the	Durati	on:
111:		150 h	5	6th se	em.		Annual (Summer)	1 sem	
1	Course:		Planned group s	sizes	Scope	e	Actual c time / cl teaching	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	32	h	43	h
		n seminars	30 students		2	SCH	32	h	43	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com	petences:		ļ					
		results.								
	•	recapitulate t	ect on the special he course conten v, they will form l	t indepe	ndently	y and de	epen their	knowled	ge throug	
	•	recapitulate t study. Ideally	he course conten	t indepe	ndently	y and de	epen their	knowled	ge throug	
3	Contents Introduc	recapitulate t study. Ideally : : etion to Interna Coordination Environmenta Risk analysis Planning mar Market entry	ational Marketing in the context of al analysis	t indepe earning ;	ndently groups	y and de that last	epen their throughou	knowled	ge throug	
	Contents Introduce	recapitulate t study. Ideally : : etion to Interna Coordination Environmenta Risk analysis Planning mar Market entry	ational Marketing in the context of al analysis decisions	t indepe earning ;	ndently groups	y and de that last	epen their throughou	knowled	ge throug	
	Contents Introduce	etion to International Environmenta Risk analysis Planning mar Market entry Marketing institutional Environmenta Coordination Environmenta Risk analysis Planning mar Market entry Marketing institutional Environmenta Coordinational Environmenta Coordinational Environmenta Coordinational Environmenta Coordinational Environmenta Coordinational Environmenta Coordinational Environmental Environme	ational Marketing in the context of al analysis decisions	g internati	ional m	y and de that last narket de ting	epen their throughou	knowled	ge throug	
1	Contents Introduce Forms of Lecture,	etion to International Coordination Environmental Risk analysis Planning mar Market entry Marketing institutional Environmental Coordination Environmental Coordination Environmental Risk analysis Planning mar Market entry Marketing institutional Environmental Environm	ational Marketing in the context of al analysis exercisions struments in interest decisions with each teaching with each teaching with each teaching with each teach tea	g internati	ional m	y and de that last narket de ting	epen their throughou	knowled	ge throug	
4	Contents Introduce Forms of Lecture,	etion to International Environmenta Risk analysis Planning mar Market entry Marketing institution requiremental Section requiremental Non Kno	ational Marketing in the context of al analysis eketing objectives decisions struments in interest teaching with emits:	g international exercises	marke	y and de that last	epen their throughou	knowled at the enti	ge throug	
3 4 5	Contents Introduce Forms of Lecture, Participal Formal: Content:	etion to International Environmenta Risk analysis Planning mar Market entry Marketing institution requiremental Section requiremental Non Kno	ational Marketing in the context of al analysis electrons struments in interest deaching with electrons.	g international exercises	marke	y and de that last	epen their throughou	knowled at the enti	ge throug	

7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Engineering Computer Sciences (B.Eng.), Mechatronics (B.Sc.) and Industrial Engineering (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. Dr. rer. oec. Klaus Rüdiger
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Colle	oquium								KOL	
Ident	ification per:	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the	Durati	ion:
1290		90 h	3	6th	or 7th s	em.	Each ser	mester		
1	Course:		Planned group	sizes	Scop	e	Actual time / c	lassroom	Self-stu	ıdy
	Lecture		60 students		0	SCH	0	h	90	h
	Tuition in	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		0	SCH	0	h	0	h
	Supervise study	d self-study	60 students		0	SCH	0	h	0	h
	candidate bachelor	e is capable thesis, its s	be assessed as a of orally prese ubject-related for well as its signif	nting an undation	d inder s, its in	endentl terdiscip	y justifyir olinary cor	ng the scie	entific top	pic of the
3	- Disp	outation on t text of the th	nesis according to he procedure in t esis	_		of the the	esis and th	e question	s that aros	se in the
4	Forms of									
			the bachelor the	SIS						
5	Formal:	on requireme								
		No		.11 41.	• .					
6	Content:	assessment:	atment of the bac	meior in	esis					
U	Oral exa									
7			ard of credit points	:						
8	Applied Compute	Mathematic r Engineerii	ule (in the following (B.Sc.), Apparing (B.Eng.), Mecod Industrial Engi	ative Bi hanical I	otechno Enginee	ology (E ring (B.)	Eng.), Med			
9	_	e of the grade g to BRPO	e for the final grade	e:						
10	Module O		Klar							
11	Other info									
12	Language German	:								

Eng	gineering D	esigning With	n Plastics						KMK	
	ntification nber:	Workload:	Credits:	Study	y semest	er:	Frequency offer	of the	Duratio	on:
112	23	150 h	5	4th o	or 6th se	em.	Annual (Summer	·)	1 sem.	
1	Course:	1	Planned group si	izes	Scope		Actual of time / cl	assroom	Self-stuc	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		1	SCH	15	h	22.5	h
		or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com	petences:			L	<u> </u>			
			cture an injection	-mould	ed part.					
3	Contents									
			tion materials, spe	-	-					
			cesses, especially	injectio	on moul	ding)				
		ss simulation,								
			, material selectio							
			on and standards,	temperi	ng, den	noulding	;)			
	- Gener	al design rule	S							
4		teaching:								
		exercise, pra								
5		tion requiremen								
	Formal:	Non								
_	Content:	Non assessment:	<u>ie</u>							
6			bination exam							
			rd of credit points:							
7	_	examination	_							
7			ile (in the following	study p	rogramn	nes)				
7	Applicati		, ,	• •	•					
	~ ~	ical Engineeri	ing (D.Eng.) and r							
	Mechan		for the final grade:							
8	Mechan Importan accordin	ce of the grade								
8	Mechan Importan accordin Module (ce of the grade g to BRPO Officer:	for the final grade:							
8 9 10	Mechan Importan accordin Module G Prof. Dr	ce of the grade ag to BRPO Officer:Ing. Christo								
8	Mechan Importan accordin Module (Prof. Dr Other inf	ce of the grade ag to BRPO Officer:Ing. Christo ormation:	for the final grade: ph Jaroschek							
8 9 10	Mechan Importan accordin Module (Prof. Dr Other inf	ce of the grade ag to BRPO Officer:Ing. Christo ormation:	for the final grade:		of the co	ourse.				
8 9 10	Mechan Importan accordin Module (Prof. Dr Other inf	ce of the grade ag to BRPO Officer:Ing. Christo ormation: re will be ann	for the final grade: ph Jaroschek		of the co	ourse.				

Med	chanical De	esign 1							KM1	
	ntification aber:	Workload:	Credits:	Stud	y semes	ter:	Frequenc	ey of the	Duratio	on:
112	.5	150 h	5	2nd	sem.		Annual (Summe	er)	1 sem.	
1	Course:	ı	Planned group s	izes	Scop	e		contact classroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	to carry elements	out practical s	rength principles strength checks a ble for the stude ag the knowledge	nd reca	lculatio develo	ns of sel p and a	ected con	nection me	ethods and	machine
3	Contents:									
	Material Time and Axles and Basics of Rolling I	d shafts f bearing arra bearing	ngth calculations	onnectio	on meth	ods				
4	Forms of	-								
		seminar, prac								
5	Formal:	ion requiremer Non	e							
6			e xam, combination	n exam,	perfori	mance ex	cam, oral	exam or ex	cam accom	panying
7	Prerequis	ite for the awar	rd of credit points:	ecaceme	ont					
8	Application		le (in the following			nes)				
9	Importano	ce of the grade	for the final grade:							
10	Module C		Nielsonn							
11	Other info				0.1					
12	Literatur Language		ounced at the beg	inning	of the c	ourse.				

1,100	chanical De	sign 2								KM2	
Iden num	tification ber:	Workle	oad:	Credits:	Study	semest	er:	Freque	ency of the	Duratio	on:
1120	6	150 h		5	3rd se	em.		Annu (Wint		1 sem.	
1	Course:		Pl	anned group siz	es	Scope			ual contact c / classroom hing	Self-stud	ly
	Lecture		60) students		2	SCH	30	h	45	h
	Tuition in	seminar	s 30) students		1	SCH	15	h	22.5	h
	Exercise		20) students		0	SCH	0	h	0	h
	Practical	or semina	ar 15	students		1	SCH	15	h	22.5	h
	Supervise	d self-stu	idy 60) students		0	SCH	0	h	0	h
	are able	to design		and develop d							rucipants
3	Contents:										
	Shaft-hu										
			sioning of	rolling bearing	gs						
	Plain bea	_									
	Belts and										
	Belts and Gears an	d gearin		1.1.	,						
4	Belts and Gears an Calculati	d gearin	struction a	and design of a	ı produ	ct exar	nple				
4	Belts and Gears an Calculati	d gearing ion, consteaching	struction a	-	ı produ	ct exar	nple				
	Belts and Gears an Calculati Forms of Lecture,	d gearing ion, consteaching seminar	struction a : c, practical	-	ı produ	ct exan	nple				
4 5	Belts and Gears an Calculati	d gearing ion, consteaching seminar	struction a : ; practical rements:	-	ı produ	ct exar	nple				
	Belts and Gears an Calculati Forms of Lecture, Participat	d gearing ion, consteaching seminar	struction a ; r, practical rements:	-				ign 1'(1125)		
5	Belts and Gears an Calculati Forms of Lecture, Participat Formal:	d gearing ion, consteaching seminar ion requi	struction a ; r, practical rements: None Participa	ls				ign 1' (1125)		
	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content:	d gearington, consteachings seminar ion requi	struction a ; ; ; practical rements: None Participa	tion in the mod	dule 'M	Iechani	ical Des			exam accom	panying
5	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content:	d gearing teaching seminar ion requiassessme	struction a ; ; ; practical rements: None Participa	ls	dule 'M	Iechani	ical Des			xam accom	panying
5	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequise	d gearing teaching seminar ion requiassessme per, write se ite for the	struction a ; ; ; practical rements: None Participa ent: tten exam,	tion in the mod	dule 'M	lechani perforn	ical Des			xam accom	panying
5	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequis: Module of	d gearing teaching seminar ion requires assessments per, write the for the examinar ion requires the for the examinar ion requires the for the examinar ion, consider the formal interest in the formal intere	struction a ; ; ; practical rements: None Participa ent: tten exam, e award of	tion in the mode, combination of credit points:	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequis: Module of Application	d gearing teaching seminar ion required assessment assessment ion required assessment in a seminar ion required as a seminar ion required assessment in a seminar ion required as a seminar ion	rements: None Participa ent: ten exam, e award of ation pass module (ir	tion in the mod	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5 6 7 8	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pa the cours Prerequise Module of Application Mechatre	assessme per, write se ite for the examina on of the onics (B	rements: None Participa ent: ten exam, e award of ation pass module (irSc.)	tion in the mode, combination of credit points: and course assort the following s	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
6	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequis: Module of Application Mechatre Importance	assessme per, write ite for the examina on of the onics (B	struction a ; ; ; practical rements: None Participal ent: ten exam, e award of ation pass module (ir .Sc.) grade for the	tion in the mode, combination of credit points:	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5 6 7 8	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequis Module Application Mechatro Important accordin	assessments on of the conics (B) ce of the g to BR	struction a ; ; ; practical rements: None Participal ent: ten exam, e award of ation pass module (ir .Sc.) grade for the	tion in the mode, combination of credit points: and course assort the following s	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5 6 7 8	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequisi Module of Application Important accordin Module of	assessment of the conics (But of the g to BR)	e award of tion pass module (ir .Sc.) grade for the PO	tion in the moderation of combination of credit points: and course assorthe following some final grade:	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5 6 7 8 9	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequist Module of Application Mechatre Important accordin Module Of Prof. Dr.	assessment of the conics (But of the geofficer: -Ing. KI	e award of tition pass module (ir .Sc.) grade for the PO	tion in the moderation of combination of credit points: and course assorthe following some final grade:	dule 'Mexam, p	Jechani perform	ical Des			xam accom	panying
5 6 7 8	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequise Module of Application Mechatro Important accordin Module O Prof. Dr. Other info	assessment of the conics (Both of the good of the good of the good of the conics (Both of the good of	e award of ation pass module (ir .Sc.) grade for the PO aus Dürko	tion in the moderation of combination of credit points: and course assorthe following some final grade:	dule 'M exam, p essmen	Jechani perforn nt ogramn	nance ex			xam accom	panying
5 6 7 8 9	Belts and Gears an Calculati Forms of Lecture, Participat Formal: Content: Forms of Term pay the cours Prerequise Module of Application Mechatro Important accordin Module O Prof. Dr. Other info	assessme per, write examination of the ponics (B) ge of the g to BR! of the properties of the grant on the properties of the grant of t	e award of ation pass module (ir .Sc.) grade for the PO aus Dürko	tion in the moderation of combination of credit points: and course assorthe following some final grade:	dule 'M exam, p essmen	Jechani perforn nt ogramn	nance ex			xam accom	panying

	struction E	Basics							KG	
Ident numl	ification per:	Workload:	Credits:	Study	semes	ter:	Frequenc	y of the	Duratio	on:
1129)	150 h	5	1st se	em.		Annual (Winter)		1 sem.	
1	Course:	·	Planned group	sizes	Scop	e	Actual time / c	lassroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	They un CAD sy	stem. s are able to st ntation	rawings. nical drawings ar							
3	Standard surfaces	disation. Drav . Fundamenta	ving reading. D ls of Materials S ic data. Applicat	Science. S	Structu	ire and f	unctioning	g of CAD	systems. I	nput and
	-	ng of geometr n analysis	•							Methods
4	of design	n analysis								Methods
4 5	of design Forms of Lecture,	n analysis	ctical course							Methods
	of design Forms of Lecture,	teaching: exercise, praction requirement	etical course							Methods
	of designation of designation of designation of Lecture, Participate Formal: Content:	teaching: exercise, praction requiremer Non Non	etical course							Methods
	Forms of Lecture, Participal Formal: Content: Forms of	teaching: exercise, praction requirement Non Non assessment:	etical course	mination	or ora	ıl examii	nation			Methods
5	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise	teaching: exercise, praction requirement Non Non assessment: examination, site for the awar	etical course tts: e e performance exa d of credit points:			ıl examii	nation			Methods
5	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati	teaching: exercise, praction requirement Non Non assessment: examination, site for the awar examination pon of the modu	etical course its: e e performance exa d of credit points: bass and course a le (in the following	ssessmer g study pro	nt ogramı	nes)	nation			Methods
5 6 7	of designal of designal of designal of Lecture, Participal Formal: Content: Forms of Written Prerequist Module Application Apparat Importan	teaching: exercise, praction requirement Non Non assessment: examination, site for the awar examination proof the modulive Biotechnoce of the grade	etical course ats: e e performance exa d of credit points: bass and course a	ssessmer g study pro Mechatror	nt ogramı	nes)	nation			Methods
5 6 7 8	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat Importan accordin	teaching: exercise, praction requirement Non Non assessment: examination, site for the awar examination properties of the modulive Biotechnoce of the grade ag to BRPO Officer:	performance exa d of credit points: pass and course a le (in the following logy B.Sc. and N	ssessmer g study pro Mechatror	nt ogramı	nes)	nation			Methods
5 6 7 8	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat Importan accordin Module O Prof. Dr	teaching: exercise, praction requirement Non Non assessment: examination, site for the awar examination properties of the grade ag to BRPO	performance exa d of credit points: pass and course a le (in the following logy B.Sc. and N	ssessmer g study pro Mechatror	nt ogramı	nes)	nation			Methods

. 143	tics Techno	ology							KT	
den	tification ber:	Workload:	Credits:	Study	semest	ter:	Frequency offer	of the	Duratio	n:
1134	4	150 h	5	2nd	or 6th s	sem.	Annual (Summer))	1 sem.	
1	Course:		Planned group s	izes	Scop	e	Actual co		Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	The stucconnecting technical select or can app	on between te lly processed. critically eval	he history and chnical progress They can assess luate suitable ma oretically acqui	and eco s for wh nufactur	onomic nich tec ring pro	use. The chnical a ocesses f	ey know ho pplication for compon	ow plastic a plastic ent produ	es are produis suitable action. The	uced an and ca studen
3	Contents:									
3	 Histor Gener Model Crysta Synthe Mecha Rheole Proces Influe Joinin 	y of plastics, e al differences I conception an allisation condi- esis of plastics anical behavior ogy (flow prop- ssing method nce of process	nd morphology (sitions ur (modulus of experties, viscosity ing on the materioonding and welco	structura lasticity and viso	, creep cosity r	modulu nodels)				
4	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheol - Proces - Influe - Joinin - Recyc	y of plastics, e al differences I conception an allisation condi- esis of plastics anical behavior ogy (flow prop- ssing method nce of process g of plastics (bling of plastics) teaching:	to metals and morphology (sitions ur (modulus of experties, viscosity ing on the material bonding and welces	structura lasticity and viso	, creep cosity r	modulu nodels)				
	- Histor - Gener - Model - Crysta - Syntho - Mecha - Rheolo - Proces - Influe - Joinin - Recyc	y of plastics, e al differences I conception an allisation condi- esis of plastics anical behavior ogy (flow prop- ssing method nce of process g of plastics (bling of plastics	to metals and morphology (s itions ur (modulus of e perties, viscosity ing on the materi bonding and welces ctical course ts:	structura lasticity and viso	, creep cosity r	modulu nodels)				
4	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participat Formal: Content:	y of plastics, e al differences l conception an allisation condi- esis of plastics anical behavior ogy (flow prop- ssing method nce of process g of plastics (b- ling of plastics teaching: s, seminar, prac- tion requirement None assessment:	to metals and morphology (stitions ur (modulus of experties, viscosity ing on the material bonding and welces ctical course ts:	structura lasticity and viso ial/comp ding)	, creep cosity r	modulu models) propertic	es,			
4 5 6	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participal Formal: Content: Forms of Written	ry of plastics, et al differences al differences al conception and lisation condition of plastics anical behavior ogy (flow proposing method ance of process g of plastics (bling of plastics teaching: s, seminar, praction requirement None None assessment: examination, coste for the award	to metals and morphology (stitions ur (modulus of eperties, viscosity ing on the material conding and welces etical course ts:	structura lasticity and viso ial/comp ding)	, creep cosity r	modulu models) propertic	es,			
4 5 7	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participal Formal: Content: Forms of Written Prerequis Module Applicati	y of plastics, eal differences al differences al conception and lisation condition of plastics anical behavior ogy (flow proposing method nce of process g of plastics (bling of plastics teaching: s, seminar, praction requirement None None assessment: examination, content of the award examination pon of the modul	to metals and morphology (stitions) ur (modulus of electrics, viscosity) ing on the material conding and welchs extical course ts:	lasticity and viso ial/comp ding) mination	, creep cosity roonent	modulumodels) propertical	es,			
4 5 6 7	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participal Formal: Content: Forms of Written Prerequis Module Applicati Mechan	y of plastics, eal differences al differences al conception are allisation conditions of plastics anical behavior ogy (flow proposing method nce of process g of plastics (aling of plastics teaching: s, seminar, praction requirement None None assessment: examination, content of the modulical Engineerince of the grade for	to metals and morphology (stitions ur (modulus of eperties, viscosity ing on the material conding and welces ectical course ts: ectical course	lasticity and viso ial/comp ding) mination	, creep cosity roonent	modulumodels) propertical	es,			
4 5 7 8	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participal Formal: Content: Forms of Written Prerequis Module Applicati Mechan	ry of plastics, et al differences al differences al conception and lisation condition of plastics anical behavior ogy (flow proposing method ance of process g of plastics (bling of plastics teaching: s, seminar, praction requirement None None assessment: examination, content of the modulical Engineering to BRPO	to metals and morphology (sitions ur (modulus of electrics, viscosity ing on the materic conding and welces combination example of credit points: ass e (in the following and M)	lasticity and viso ial/comp ding) mination	, creep cosity roonent	modulumodels) propertical	es,			
4	- Histor - Gener - Model - Crysta - Synthe - Mecha - Rheole - Proces - Influe - Joinin - Recyc Forms of Lectures Participal Formal: Content: Forms of Written Prerequis Module Applicati Mechani Importan accordin Module O	ry of plastics, et al differences al differences al conception and lisation condition of plastics anical behavior ogy (flow proposing method ance of process g of plastics (bling of plastics teaching: s, seminar, praction requirement None None assessment: examination, content of the modulical Engineering to BRPO	to metals and morphology (stitions ur (modulus of eperties, viscosity ing on the material conding and welces ectical course ts: ec	lasticity and viso ial/comp ding) mination	, creep cosity roonent	modulumodels) propertical	es,			

Math	nematics 1								MA1	
Ident numb	ification per:	Workload:	Credits:	Study	y semest	er:	Frequenc offer	y of the	Durati	on:
1149)	150 h	5	1st s	em.		Annual (Winter))	1 sem	l .
1	Course:	l	Planned group si	zes	Scope	e	Actual time / c teachin	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	procedur out solut	-	ns can be solved learned and their problems.	-	-				-	
3	Contents:									
	- Definit - Limit - Import - Compl - Differe - Integra	tion of functivalue and contant functional ex numbers a	al classes and their application and its rule	on	ns	-				
4	Forms of	teaching:	ed teaching with ex	voroiso	,					
5		ion requiremen		ACTOISC	,					
_	Formal:	Non								
	Content:		wledge of school	mathen	natics					
6		assessment:	combination exan			l examin	ation			
7	Prerequis		rd of credit points:							
8	Application	on of the modu	ale (in the following blogy (B.Sc.) and I		_					
9	Importance		for the final grade:	vicenae.	ionies (B.Sc.)				
	Module C									
10	Drof De	Ing Polf M	umann							
10		-Ing. Rolf Na	aumann							
10	Other info Literatur	ormation: e will be ann	aumann ounced at the begi ür Ingenieure und				Rd lund	Rd 2		

1,100	nematics 2								MA2	
Ident numb	rification per:	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duration	on:
1155	5	150 h	5	2nd s	em.		Annual (Summer	·)	1 sem	•
1	Course:		Planned group si	zes	Scope	e	Actual of time / cl	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
3	ability to	think abstrac	tly and to find sol	utions a	are furt	her deve	eloped.			
	LinearLinearMultid	algebra: Calc systems of ec imensional di	ector algebra and a culator operation valuations and eiger fferential calculus conally symmetrica	with vec avalue p s with a	tors an roblen pplicat	d matric ns ions				
4	Forms of Lecture,		d teaching with ex							
5	Participati Formal: Content:			reicises						
		None	9							
6	Forms of	None Mod assessment:		1 (1149))	I examin	ation			
	Forms of Written of Prerequisi	None Mod assessment: examination, of	ule Mathematics combination exam d of credit points:	1 (1149))	l examin	ation			
7	Forms of Written of Prerequisis Module of Application	None Mod assessment: examination, of the for the awar examination pon of the moduly ve Biotechnology	combination examed of credit points: bass le (in the following logy (B.Sc.) and M	1 (1149) nination study pro	or ora	nes)	ation			
7	Forms of Written 6 Prerequisi Module 6 Application Apparati Importance	None Mod assessment: examination, of the for the awar examination pon of the moduly ve Biotechnology	combination exam d of credit points: pass le (in the following	1 (1149) nination study pro	or ora	nes)	ation			
7 8 9	Forms of Written & Prerequisi Module & Application Apparati Importance according Module C Prof. Dr.	None Mod assessment: examination, of the for the awar examination p on of the modul ve Biotechnol the of the grade g to BRPO officer: -Ing. Rolf Na	ule Mathematics combination exam d of credit points: bass le (in the following logy (B.Sc.) and M for the final grade:	1 (1149) nination study pro	or ora	nes)	ation			
6 7 8 9 10	Forms of Written e Prerequisi Module e Application Apparati Importance according Module O Prof. Dr. Other info	None Mod assessment: examination, of the for the awar examination proposed of the grade of the g	ule Mathematics combination exam d of credit points: bass le (in the following logy (B.Sc.) and M for the final grade:	nination study production	or ora	nes) B.Sc.) Durse. Pa		nar, Mathe	ematik	

Math	nematics 3								MA3	
Ident numb	rification per:	Workload:	Credits:	Study	semest	er:	Frequency	y of the	Durati	on:
1160)	150 h	5	3rd s	em.		Annual (Winter)		1 sem	
1	Course:		Planned group six	zes	Scope	9	Actual of time / c	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
3		problems and	to apply ordinary d to work out solu		_	-		mathemati	cai relatio	onsnips to
	LinearExampSystemSolutionNumerDescription	differential edule from mechas of linear diton with the herical solution	ary differential ecquations of 2nd or anics and electric fferential equation lp of eigenvalues methods for non-lions and DGL in to or Analysis	rder wit al engin as with and eig inear d	th consineering constar senvect	tant coe nt coeffi ors ial equa	fficients cient			
4	Forms of	teaching:								
•		_	d teaching with ex	ercises						
5		ion requiremen								
	Formal: Content:	None		2 (1155)					
6		assessment: examination, o	1							
			combination exam	nination	or ora	l examir	ation			
7			d of credit points:	nination	or ora	l examir	nation			
	Module of Application	ite for the award examination pon of the modul	d of credit points:	study pr	ogramn	nes)	nation			
7	Module of Application Apparation Importance	ite for the award examination pon of the modulive Biotechnol	d of credit points: ass e (in the following	study pr	ogramn	nes)	aation			
7	Module of Application Apparati Important according Module O	ite for the awar examination p on of the modul ve Biotechnol ce of the grade of g to BRPO officer:	d of credit points: ass e (in the following ogy (B.Sc.) and M for the final grade:	study pr	ogramn	nes)	aation			
7 8 9	Module of Application Apparati Importance according Module Of Prof. Dr.	examination properties of the module we Biotechnology of the grade of the grade of the BRPO officer: -Ing. Rolf Na	d of credit points: ass e (in the following ogy (B.Sc.) and M for the final grade:	study pr	ogramn	nes)	aation			
7 8 9	Module of Application Apparation Important according Module Or Prof. Dr. Other info	ite for the aware examination point of the modulive Biotechnology of the grade of the grade of the grade of the BRPO officer: -Ing. Rolf Nation: e will be annoted.	d of credit points: ass e (in the following ogy (B.Sc.) and M for the final grade:	study pr Mechati	ogramn conics (nes) B.Sc.)		d. 2 und B	d. 3	

1.100	chatronics									ME	
Iden	tification ber:	Workl	oad:	Credits:	Stud	y semes	ter:	Frequency	y of the	Duratio	on:
1164		150 h		5	6th	sem.		Annual 1 sem. (Summer)			
1	Course:			Planned group s	sizes	Scop	e	Actual of time / cl	assroom	Self-stud	ly
	Lecture			60 students		2	SCH	30	h	45	h
	Tuition in	n seminai	rs	30 students		1	SCH	15	h	22.5	h
	Exercise			20 students		0	SCH	0	h	0	h
	Practical	or semin	ar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-st	udy	60 students		0	SCH	0	h	0	h
	paramete Determi Understa respectiv	ers, ana nation o anding	alysis of f harmor of mech	of machines a f vibration p nic oscillations natronic system	roblems s from r	, deter neasure	mination ments (F	of poss	sible con: alysis).	structive s	solutions.
3	Contents	all syste e tools: l	m. Matlab,	ditions. Ability	y to esti	mate an	d calcula	te the stat	ic and dyr	namic para	meters of
	Contents Example compone moveme engines, two-mas vibration drives, s and mag	e tools: I	echatron a syste ergy comachine aree-mas rties of ti motor dr	_	MIMO scal ener rotation rams. D Equations d shape	ystems, gy cor al mov escripti ns of m Servo -memor	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanical aslational smission, one-mass, modes of magnetic
4	Contents Example compone moveme engines, two-mas vibration drives, s and mag	es of meents as ents, end, driven is sand the n. Proper regnetostric	echatron a syste ergy co machine aree-mas rties of t motor dr ctive act	Simulink. sic systems, Mem, mechanic nductors for s, motion diagrams, so oscillators: I he natural oscilives, piezo and uators, micron	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, egy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanical aslational smission, one-mass, modes of magnetic
4	Contents Example componimoveme engines, two-mas vibration drives, s and mag	et tools: I	echatron a syste ergy co- machine nree-mas rties of t motor dr ctive act	Simulink. nic systems, Mem, mechanic nductors for s, motion diagrees oscillators: I he natural oscives, piezo and nuators, micron teaching, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, egy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanical aslational smission, one-mass, modes of magnetic
4	Contents Example componimoveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participar	et tools: I	echatron a syste ergy co- machine nree-mas rties of t motor dr ctive act	Simulink. nic systems, Mem, mechanic nductors for s, motion diagrees oscillators: I he natural oscives, piezo and nuators, micron teaching, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, egy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanical nslational smission, one-mass, modes of magnetic
4	Contents Example componimoveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participal Formal:	et tools: I	echatron a syste ergy comachine aree-mas rties of ti motor dr ctive act r-based to irements: None	Simulink. nic systems, Mem, mechanic nductors for s, motion diagrees oscillators: I he natural oscives, piezo and nuators, micron teaching, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, egy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanical nslational smission one-mass modes of magnetic
4 5	Contents Example componimoveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participal Formal: Content:	et tools: I	echatron a syste ergy comachine aree-mas rties of t motor dr ctive act r-based t irements: None None	Simulink. nic systems, Mem, mechanic nductors for s, motion diagrees oscillators: I he natural oscives, piezo and nuators, micron teaching, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, egy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, nasystems, ry alloy (cation of energy mechanic cillations. tural freq inverter d (SMA) ac	MIMO syconductor travel converse arrives, line tuators, pi	ystems, mess for transansform. Ond natural ar motors, neumatic, l	echanica nslationa smission one-mass modes of magnetic
	Contents Example compone moveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participal Formal: Content:	et tools: I	echatron a syste ergy comachine aree-mas rties of the motor dr ctive act r-based to irements: None None ent:	simulink. sic systems, Mem, mechanic nductors for s, motion diagrams, so oscillators: I he natural oscilives, piezo and auators, micron teaching, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, rgy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, na systems, ry alloy (ems for a	cation of energy mechanic cillations. tural frequinverter descriptions actuators a	MIMO syconductor cal converse arrives, line tuators, prind sensor	ystems, more for transform. Ond natural matural matural sar motors, neumatic, less.	echanica nslationa smission one-mass modes of magnetic hydraulic
4 5 6	Contents Example compone moveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participal Formal: Content: Forms of Written	et tools: I es of me ents as ents, ene diven i es and the n. Proper stepper r gnetostric teaching seminar tion require	echatron a syste ergy co machine nree-mas rties of ti motor dr ctive act r-based ti irements: None None ent: ation, co	Simulink. nic systems, Mem, mechanic inductors for ss, motion diagrams, so oscillators: I he natural oscilives, piezo and auators, micron interesting, pract	MIMO scal ener rotation rams. D Equation Ilations. d shape nechani	ystems, rgy cor al mov escripti ns of m Servo -memor cal syst	identification ductors, rements, on of oscotion, na systems, ry alloy (ems for a	cation of energy mechanic cillations. tural frequinverter descriptions actuators a	MIMO syconductor cal converse arrives, line tuators, prind sensor	ystems, more for transform. Ond natural matural matural sar motors, neumatic, less.	echanica nslationa smission one-mass modes o magnetic hydraulic
4 5	Contents Example compon- moveme engines, two-mas vibration drives, s and mag Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise	et tools: I	echatron a syste ergy co machine nree-mas rties of t motor dr ctive act r-based t irements: None None ent: ation, co e award o	simulink. sic systems, Mem, mechanic nductors for s, motion diagrams, so oscillators: I he natural oscilives, piezo and auators, micron teaching, pract	MIMO scal ener rotation rams. D Equations d shape nechani	ystems, gy cor al mov escripti ns of m Servo -memor cal systems	identification ductors, rements, on of oscotion, na systems, ry alloy (ems for a	cation of energy mechanic cillations. tural frequinverter descriptions actuators a	MIMO syconductor cal converse arrives, line tuators, prind sensor	ystems, more for transform. Ond natural matural matural sar motors, neumatic, less.	echanica nslationa smissior ne-mass modes o magneti hydrauli

	Electrical Engineering (B.Eng.), Engineering Computer Sciences (B.Eng.) and Mechatronics (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Heinrich Kühlert
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Mea	suring Tec	hnology	•								MT	
Iden	tification ber:	Workl	oad:	Credits:	Study	semeste	er:		requency offer	of the	Duration	1:
116	3	150 h		5	3rd s	em.			Annual Winter)		1 sem.	
1	Course:			Planned group si	zes	Scope	;		Actual continue / class teaching		Self-study	7
	Lecture			60 students		2	SCH		30	h	45	h
	Tuition in	seminar	'S	30 students		1	SCH		15	h	22.5	h
	Exercise			20 students		0	SCH		0	h	0	h
	Practical	or semin	ar	15 students		1	SCH		15	h	22.5	h
	Supervise	ed self-stu	ıdy	60 students		0	SCH		0	h	0	h
3		isic prin		; determine pos of the developm								
3	Principle measurer general a current,	e of mea ment un aspects f voltage	certaint for the s and pe	nt, SI units, stru ies, disturbance election and use ower measurem e measurement	e variab e of mea nent, le	les and asuring ngth, a	l their r transdu angle a	ed ice nd	luction, arers, time a	nalogue and freque	nd digital ency measu ent, force,	signals, rement, torque,
4	Forms of	teaching										
	Lecture,	seminai	-based	teaching with ex	xercises	and pr	oject tas	sks	s, practica	l course		
5	Participat	ion requi	rements:	:								
	Formal:		None									
	Content:		None									
6	Forms of Written 6			mbination exan	nination	, perfoi	mance	ex	amination	or oral e	xamination	1
7	_			of credit points:	sessmei	nt						
8	Application	on of the	module	(in the following gy (B.Sc.), Mec	study pr	ogramm		Inc	dustrial Er	ngineering	g (B.Sc.)	
9	Importano accordin		_	r the final grade:								
10	Module C	Officer:										
	Prof. Dr.			rmann								
11	Other info			nced at the begi	nning o	f the co	ourse.					
12	Language											
	German											

Net	work Techi	nology							NW	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	y of the	Duratio	on:
118		150 h	5	3rd o	or 5th s	em.	Annual (Winter)		1 sem.	
1	Course:		Planned group s	izes	Scope	e	Actual of time / cl	assroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
				mate co	nngura	ation erro	ors in a LA	AN.		
	- T	tudents are fa	amiliar with the ro ame possibilities t	le of a s	witch a	nd confi	igure virtu	al LANs ((VLAN).	
	Contents - A - M - L - S - P - F - C - A - S	tudents are fathe students in the students ocal network ubnet format rotocols of distriction of in configuration in the students in the studen	amiliar with the ro	compute teristics, able subinational for a compling control for a cotocols.	r-aided net leng ks (net device setting	gths (VL work and s (espectup network	unication s SM), d transportially route	al LANs (ncks. ystems, t layer),		
4	Contents - A - M - L - S - P - F - C - A - S	tudents are fathe students in the students and the students ocal network subnet format rotocols of distriction of information of information and teaching: seminar-bas	amiliar with the ro name possibilities to a transmission, as and their charaction also with varia ata transmission in aportant network coof active components vel services and produced practical constru	compute teristics, able subjunction for rotocols, ction of	r-aided net leng ks (net device setting	gths (VL work and s (espectup network	unication s LSM), d transpor ially route orks,	ystems, t layer), r, switch)	,	ship
3	Contents - A - M - L - S - P - G - A - S Forms of Lecture,	tudents are fathe students in the students are fathered at the students ocal network ubnet format rotocols of distriction of importation of interesting in the students in the	amiliar with the ro name possibilities to a transmission, as and their charaction also with varia ata transmission in aportant network coof active components vel services and produced to the construction of	compute teristics, able subjunction for rotocols, ction of	r-aided net leng ks (net device setting	gths (VL work and s (espectup network	unication s LSM), d transpor ially route orks,	ystems, t layer), r, switch)	,	ship
4	Contents - A - N - L - S - P - C - A - S Forms of Lecture, Participal Formal:	tudents are fathe students in the students ocal network ubnet format rotocols of distriction of implication and teaching: seminar-base tion requirements.	amiliar with the ro name possibilities to a transmission, as and their charaction also with varia ata transmission in aportant network confactive components vel services and produced the practical construction of the produced that the produced th	compute teristics, able subjunction for rotocols, ction of	r-aided net leng ks (net device setting	gths (VL work and s (espectup network	unication s LSM), d transpor ially route orks,	ystems, t layer), r, switch)	,	ship
5	Contents - A - N - L - S - P - C - A - S Forms of Lecture, Participal Formal: Content:	tudents are fathe students in the students ocal network ubnet format rotocols of distriction of in the students or the student	amiliar with the ro name possibilities to a transmission, as and their charaction also with varia ata transmission in aportant network confactive components vel services and produced the practical construction of the produced that the produced th	compute teristics, able subjunction for rotocols, ction of	r-aided net leng ks (net device setting	gths (VL work and s (espectup network	unication s LSM), d transpor ially route orks,	ystems, t layer), r, switch)	,	ship
5	Contents A B Contents A C C C C C C C C C C C C C C C C C C	tudents are fathe students in the students and the student for the student format rotocols of distriction of information of information and teaching: Seminar-base Non assessment:	amiliar with the ro name possibilities to name possibilities to nation application of on a transmission, as and their characterion also with varia ata transmission in apportant network of of active components of active components and practical construction ded teaching, projection.	compute teristics, able sub- noupling ents for cotocols, ction of	r-aided net leng ks (net device setting compu	gths (VL work and s (espectup network with	igure virtu hacker atta nication s SM), d transpor ially route rorks, rorks.	al LANs (neks. ystems, t layer), r, switch)	the intern	ship
5	Contents A B Contents A Contents A Contents A Contents A Contents A Contents A Contents Borms of Lecture, Contents Contents Forms of Written examina	tudents are fathe students in the students and data ocal network ubnet format rotocols of distriction of importation and teaching: Seminar-bas Non assessment: Examination Non assessment:	amiliar with the ro name possibilities to name possibilities to nation application of of a transmission, as and their charaction also with varia ata transmission in apportant network of of active components of active components and practical construited teaching, project that is the components of active components of active components of active components of active components.	compute teristics, able sub- noupling ents for cotocols, ction of	r-aided net leng ks (net device setting compu	gths (VL work and s (espectup network with	igure virtu hacker atta nication s SM), d transpor ially route rorks, rorks.	al LANs (neks. ystems, t layer), r, switch)	the intern	ship
5	Contents A B Contents A Contents A Contents A Contents A Contents A Contents Forms of Lecture, Written examina Prerequis	tudents are fathe students in the students ocal network ubnet format rotocols of distriction of importation in the seminarion and teaching: Note	amiliar with the ro name possibilities to a transmission, and their charaction also with varia ata transmission in aportant network coof active components vel services and produced teaching, project the transmission in the protection of active components and produced teaching, project the transmission in the protection of active components and the produced teaching, project the transmission of active construction of active components.	compute teristics, able submanetwork for cotocols, ction of the teristic of th	r-aided net leng ks (net device setting computation or ora	I community of the confinence of the community of the com	igure virtu hacker atta nication s SM), d transpor ially route rorks, rorks.	al LANs (neks. ystems, t layer), r, switch)	the intern	ship
5	Contents A B Contents A Contents A Contents A Contents A Contents Forms of Lecture, Participal Formal: Content: Forms of Written examina Prerequis Module	tudents are fathe students in the students ocal network ubnet format rotocols of distriction of implication le imulation and teaching: seminar-base tion requirement in the students in the s	amiliar with the ro name possibilities to name possibilities to nation application of of a transmission, as and their charaction also with varia ata transmission in apportant network of of active components of active components and practical construited teaching, project that is the components of active components of active components of active components of active components.	compute teristics, able submanetwork for a rotocols, ction of the and grant	r-aided net leng ks (net device setting compu	I community of the confinence of the community of the com	igure virtu hacker atta nication s SM), d transpor ially route rorks, rorks.	al LANs (neks. ystems, t layer), r, switch)	the intern	ship

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Lutz Grünwoldt
11	Other information:
	Literature will be announced at the beginning of the course. Lecture notes will be provided. Each student will be a member of a Cisco class and will have access to a simulation environment and extensive online curricula. Certificates can be issued for successful participation in Cisco final exams.
12	Language:
	German

Phot	conics								РНО	
Iden num	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequency	y of the	Durati	on:
1309)	150 h	5	4th o	or 6th s	em.	Annual (Summe	r)	1 sem	
1	Course:	1	Planned group s	izes	Scop	e	Actual of time / contents	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		1	SCH	15	h	30	h
		or seminar	15 students		1	SCH	15	h	15	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com	petences:		1					
	develop	ments driven t-directing co	ortant areas of ap by photonics. Na mponents. Enable	aming, i	interpre	ting and	d designin	g interacti	ing light-g	generating
3	Contents									
	and stan optics, p handling	dards. Spectra shotometry, la s of optical la	nd current develor al eye sensitivity aser effect, holog boratory systems logy and medical	and phography as. Appli	otometrand into	ric radia erferome	tion equiv etry, simu	alent, geo lation of o	metric optoptical be	tics, wave
4	Forms of	teaching:								
			practical course							
5		ion requiremen	its:							
	Formal: Content:									
6		assessment:								
O		examination,	Combination exa	minatio	n, Perf	ormance	examinat	ion, Projec	ct work or	oral
7	01101111111		d of credit points:							
	Module	examination p	pass and course as							
8			le (in the following logy (B.Sc.) and		-					
9	Importan	ce of the grade	for the final grade:		ioines ((B.Sc.)				
10	Module (g to BRPO Officer:								
11	Prof. Dr	-Ing. Reinhar	d Kaschuba							
11	The cou	rse material	is summarised and a collection of			_		_		_

Phys	ics									PHY	
	ification	Worklo	ad:	Credits:	Study	semeste	er:	Frequency	of the	Duration	:
1319		150 h		5	2nd s	em.		offer Annual (Summer)		1 sem.	
1	Course:	!	Pl	anned group siz	es	Scope	;	Actual co		Self-study	,
	Lecture		60	students		2	SCH	30	h	45	h
	Tuition in	seminars) students		1	SCH	15	h	30	h
	Exercise) students		0	SCH	0	h	0	h
	Practical			students		1	SCH	15	h	15	h
	Supervise) students		0	SCH	0	h	0	h
2	thermody	basic pynamics,	hysical oscillatio	processes and ons, optics and d analysis of ex	acoust	tics.				fluid med	chanics,
3	Contents:										
3	Mechani forces, w Fluid me equation Thermod processe Vibration vibration Optics (g	cs (kinen york, ener echanics , laminar lynamics s, phase t ns and w as, harmo geometric	gy, power (hydrosta and turb (tempera ransition vaves (from ic wave er reflecti	ne and three-dier, momentum atics: pressure ulent flow, fricature, heat, the ss). ee damped and ss, Doppler effon, refraction, bund level, sou	. c, buoy ction). ermal e d unda ect, inte	ancy; hexpansion amped erferency; wave	nydrody on, gas vibratio ce, diffi optics:	rnamics: co laws, internous, forced raction).	ntinuity enal energy	quation, Bo	ernoulli circular
4	Forms of	_	basad tas	aching with ex	oroicoc	and pr	oioct to	ske proctice	al course		
	Lecture,	schillar-	vaseu lea	cinng with ex	cicises	anu pr	ojeci idi	sks, practica	ar course		
5	Participat	ion require	ements:								
	Formal:										
	Content:										
6	Forms of										
				al examination	l						
7	_			credit points:							
0				and course ass			(ac)				
8				the following s (B.Sc.) and M		-					
9				ne final grade:	icciiati	omes (J.SC.)				
 	accordin	_		5.440							
10	Module C		·								
	Prof. Dr.	Dr. And	rea Ehrm	nann							

11	Other information:
12	Language:
	German

	ctical Proje	ct / Internship							PRA	
Iden num	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequenc offer	y of the	Duratio	on:
129	2	450 h	15	7th s	sem.		Each ser	nester	12 we	eks
1	Course:	1	Planned group s	sizes	Scope	e	time /	contact	Self-stud	dy
	Lecture		60 students		0	SCH	0	h	450	h
	Tuition in	n seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	petences:		-1	1	1			
	In the w	ork term, the a	ctivities and lear	ning ou	tcomes	imparted	d in the co	urse of stud	ly are to b	e applie
			nanner. To this e	_					•	
			olution strategie							
		_	presentation and				•	1		,
		8,1								
3	Contents									
	The con	tents result fro	m the field of act	ivity of	the resp	ective cl	hosen con	npany or en	terprise aı	nd shoul
			g task. At the en							
		-	students a final	-	_	-	-		ents shoul	d receiv
	individu	al and profess	ional advising fr	om the	supervis	sing univ	versity lec	turers.		
	F 6	. 1:								
4		teaching:	1.1							
		tion requiremen	ng with exercises							
_	Participa			as acco	mpanyi	ng guida	ance			
5	T 1			as acco	mpanyi	ng guida	ance			
5	Formal:	None	e	as acco	mpanyi	ng guida	ance			
	Content:	None None	e	as acco	mpanyi	ng guida	ance			
5 6	Content: Forms of	None None assessment:	e	as acco	mpanyi	ng guida	ance			
6	Content: Forms of Term pa	None None assessment:	e e	as acco	mpanyi	ng guida	ance			
	Content: Forms of Term pa	None assessment: per site for the awar	e e d of credit points:	as acco	mpanyi	ng guida	ance			
6	Content: Forms of Term pa Prerequis Module	None assessment: per site for the awar examination p	e e d of credit points:				ance			
6	Content: Forms of Term pa Prerequis Module Applicati	None assessment: per site for the awar examination p on of the modu	e d of credit points: bass le (in the following	g study p	rogramn	nes)		ng) Maah	anical En	ginaerin
6	Content: Forms of Term pa Prerequis Module Applicati	None assessment: per title for the awar examination p on of the modulal Engineering	d of credit points: bass le (in the following (B.Eng.), Engin	g study p	rogramn	nes) ter Scier	nces (B.E			
6	Content: Forms of Term pa Prerequis Module Applicati	None assessment: per title for the awar examination p on of the modulal Engineering	e d of credit points: bass le (in the following	g study p	rogramn	nes) ter Scier	nces (B.E			
6 7 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.)	None assessment: per site for the awar examination p on of the modulal Engineering Mechatronic	d of credit points: bass le (in the following (B.Eng.), Engin (S (B.Sc.), Renew	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.)	None assessment: per site for the awar examination p on of the modu al Engineering o, Mechatronic ce of the grade	d of credit points: bass le (in the following (B.Eng.), Engin	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.)	None None assessment: per site for the awar examination p on of the modul al Engineering by, Mechatronic ce of the grade	d of credit points: bass le (in the following (B.Eng.), Engin (S (B.Sc.), Renew	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.) Importan accordin	None assessment: per title for the awar examination p on of the modulal Engineering of, Mechatronic ce of the grade ag to BRPO Officer:	d of credit points: pass le (in the following (B.Eng.), Engin (B.Sc.), Renew for the final grade:	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.) Importan accordin Module (Prof. Dr	None None assessment: per site for the awar examination p on of the modul al Engineering by, Mechatronic ce of the grade	d of credit points: pass le (in the following (B.Eng.), Engin (B.Sc.), Renew for the final grade:	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.) Importan accordin Module (Prof. Dr	None assessment: per title for the awar examination proportion of the modulated Engineering by, Mechatronic ce of the grade ag to BRPO Difficer:Ing. Anton K	d of credit points: pass le (in the following (B.Eng.), Engin (B.Sc.), Renew for the final grade:	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			
6 7 8 8	Content: Forms of Term pa Prerequis Module Applicati Electrica (B.Eng.) Importan accordin Module (Prof. Dr	None assessment: per site for the awar examination p on of the modulal al Engineering of, Mechatronic ce of the grade ag to BRPO Officer:Ing. Anton Kormation:	d of credit points: pass le (in the following (B.Eng.), Engin (B.Sc.), Renew for the final grade:	g study p neering vable En	rogramn	nes) ter Scier	nces (B.E			

Prod	uct and Pri	ce Manageme	ent						PPM	
Ident	ification per:	Workload:	Credits:	Stuc	ly semest	ter:	Frequenc	y of the	Duration	on:
1209		150 h	5	5th	sem.		Annual (Winter))	1 sem	•
1	Course:		Planned group s	sizes	Scope	e		contact lassroom	Self-stu	dy
	Lecture		60 students		3	SCH	45	h	67.5	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	etences:		*	•		•	-	
	programi understai targeted	me, product and the mode of manner. Studen	of strategic mark and pricing polic of action of the ents acquire the life cycle and to	y and operation	can eval ve mark ence to	uate the et contro develop	ir possibi ol instrum concepts	lities and latents and o	imits. The	e students them in a
3	Contents:									
	• Ove	erview of the i	nstruments of op	eration	al mark	eting				
		gramme policy								
	• Proc	duct policy								
	• Con	tracting polic	y							
	• Bas	ic concepts of	distribution pol	icy						
4	Forms of									
		seminar-based								
5		ion requirement								
	Formal:	None	2							
6	Content:	assessment:								
U			combination exa	minatic	n. perfo	rmance (examinati	on or oral	examination	on
7			d of credit points:		, p•110			01 01 0141	***************************************	
	_	examination p	-							
8			e (in the following							
	Mechatro	onics (B.Sc.),	Renewable Ener	gies (B	.Eng.) a	nd Indus	strial Eng	ineering (F	3.Sc.)	
9		ce of the grade to BRPO	for the final grade:							
10	Module C	Officer:	134 ~:							
			egard Manz-Sch	umach	er					
11	Outer IIII									
11	Other information: Literature will be announced at the beginning of the course. Renewable Energies stu									
11		e will be anno				ourse. R	enewable	Energies s	study	
11		e will be anno me: possible e	ounced at the beg elective subject to			ourse. R	enewable	Energies s	study	

Prod	luction Pla	nning							PRP	
ldent	rification per:	Workload:	Credits:	Study	semes	ter:	Frequenc offer	y of the	Durati	on:
1212	2	150 h	5	4th o	r 6th s	em.	Annual (Summe	r)	1 sem	
1	Course:	1	Planned group s	sizes	Scop	e	Actual time / c teachin	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	-	ed self-study outcomes/com	60 students		0	SCH	0	h	0	h
3	example They are impact of The studevaluate on other	s. able to evalue on holistic bus dents underst the informati planning step	oly tools and metate the planning siness processes band the procedure on exchanged between exchanged between the siness in the area of	results in between s res in the	terms supplie e sub- e sub-p	of plausers and c processes	sibility and ustomers. es of prod s and to ass	d efficienc	y and to as	ssess the
	- M - T - In m - P - M - S - O - M - S	titable for pro- larket require ypical EDP and aformation flow taterial master rogramme plantaterial require cheduling and order processing lapping a Kar hipping preparation	tween developmend duction ments for production pplication areas to wand associated and primary and primary and production and production and production and production delivery and production plant approduction plant and production plant approduction plant approduction plant and production plant approduction plant approduction plant approduction plant approduction plant approduction approach as a production plant approach a	tion procosuppor data stracellace may needs with BO and order neem and invoi	t produ uctures aster, i assess M exp	and their action plants in the I coutings) ment, losion a	r control anning an T systems	d control (master d	ata manag	
4		teaching: and exercise								
5		ion requiremen	nts:							
	Formal:	Non								
	Content:		ic knowledge of r	nanufact	uring _]	processe	s and basi	c knowled	ge of info	rmation
5	Forms of	assessment:								
	Written	examination (or oral examination	on						
7			rd of credit points:							
	Module	examination j	pass							
	Applicati	on of the modu	ile (in the following	study nr	norami	nes)				
			and Industrial Er							

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. Dr. rer. oec. Pascal Reusch
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	luction En	gineering							PRT	
Ident numl	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequenc offer	y of the	Durati	ion:
1214		150 h	5	3rd	or 5th s	em.	Annual (Winter)	•	1 sem	1.
1	Course:		Planned group s	sizes	Scop	e		contact lassroom	Self-stu	ıdy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Superviso	ed self-study	60 students		0	SCH	0	h	0	h
2	Students		petences: pasic terms of pro			1	1	,	ļ	,
	re - k	egard to their a	f the results obtaind advantages and datial basics in the	isadvan	tages.					/1un
			omic and organis ble measuring an	sational	framew	ork cond	ditions of	assembly	concepts.	
3	Contents Applica machini mouldin assembl	tion-relevant ng, assembly g processes, h	_	sational and testin	used used rating practing process.	manufact	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roductio
3	Contents Applica machini mouldin assembl	tion-relevant ng, assembly g processes, fry concepts, me	basics of industriand testing and testing of comming processes easuring and test	sational and testin	used used rating practing process.	manufact	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roductio
1	Contents Applica machini mouldin assembl Forms of Lecture, Participa Formal:	tion-relevant ng, assembly g processes, ny concepts, me teaching: seminar-base tion requirement	basics of industry and testing of comming processes easuring and testing distributions.	sational and testin	used used rating practing process.	manufact	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roductio
	Contents Applica machini mouldin assembl Forms of Lecture, Participa Formal: Content:	tion-relevant ng, assembly ng processes, ny teaching: seminar-base tion requirement Non Non assessment:	basics of industand testing and testing of comming processes easuring and testing distance teaching testing te	sational ad testin strially compone es, sepa ing equ	used used rating practing process.	manufact	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roductio
1	Contents Applica machini mouldin assembl Forms of Lecture, Participa Formal: Content: Forms of Written Prerequise	tion-relevant ng, assembly ng processes, ng y concepts, mg teaching: seminar-base tion requirement Non Non assessment: examination osite for the awar	basics of industand testing of comming processes easuring and testing distance teaching easuring and testing easuring and testing easuring and testing easuring easur	sational ad testin strially compone es, sepa ing equ	used used rating practing process.	manufact	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roduction: Origin
5	Contents Applicar machini mouldin assembl Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati	tion-relevant ng, assembly ng processes, ny concepts, me teaching: seminar-base tion requirement Non Non assessment: examination of site for the awar examination properties.	basics of industry and testing of comming processes easuring and test description of comments of the comments	sational ad testin strially compone ses, sepa ing equipon	used used rating pipment	manufact de of morocesses	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roduction:
i 5	Contents Applicar machini mouldin assembl Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Mechan Importan	tion-relevant ng, assembly ng processes, y concepts, me teaching: seminar-base tion requirement Non Non assessment: examination of site for the awar examination pion of the modu ical Engineeri	basics of industry and testing of coming processes easuring and test deaching tests: e e or oral examination of credit points: bass	sational ad testin strially compone es, sepa ing equipon	used used rating pipment	manufact de of morocesses	ditions of characteri	assembly se components occasses faterials an	concepts. nent prope for the pad plastics	roduction:

11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

110	ect 3 with 1	Design A	Aspect	S						PR3	
Iden num	tification ber:	Worklo	oad:	Credits:	Stud	y semes	ter:	Frequenc	y of the	Duratio	on:
122	4	150 h		5	3rd s	sem.		Annual (Winter)		1 sem	
1	Course:			Planned group s	sizes	Scop	e	Actual time / c	lassroom	Self-stud	dy
	Lecture			60 students		0	SCH	0	h	0	h
	Tuition in	n seminar	S	30 students		0	SCH	0	h	0	h
	Exercise			20 students		0	SCH	0	h	0	h
	Practical	or semina	ar	15 students		2	SCH	30	h	120	h
	Supervise	ed self-stu	ıdy	60 students		0	SCH	0	h	0	h
	decision	s.	t steps	s and results. T	They dev	elop a	basis fo	r decision	ı-making,	evaluate a	and mak
	They con	mpile the	e proje	ect result and dra	aw a crit	ical co	nclusion.				
3	Contents:	_	e proje	ect result and dra	aw a crit	cical co	nclusion.				
3	Contents: Structuri	ing of ta	isks in	mechatronic p nd project work communication	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
	Contents: Structuri product of technique basics.	ing of ta developi es, tech	usks in ment a nical	mechatronic p	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
4	Contents: Structuri product of technique basics. Forms of Project	ing of ta developi es, tech teaching:	asks in ment a nical	mechatronic p nd project work communication	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
4	Contents: Structuri product of technique basics. Forms of Project Participat	ing of ta developi es, tech teaching:	asks in ment a nical o	mechatronic p nd project work communication	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
4	Contents: Structuri product of technique basics. Forms of Project Participat Formal:	ing of ta developi es, tech teaching:	rement None	mechatronic p nd project work communication	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
4 5	Contents: Structuri product of technique basics. Forms of Project Participat Formal: Content:	ing of ta developi es, tech teaching:	rement None	mechatronic p nd project work communication	oroduct o	levelop	oment. O	ptimisatio	ment tech	niques, pre	esentatio
4	Contents: Structuri product of technique basics. Forms of Project Participat Formal: Content: Forms of	ing of ta developi es, tech teaching:	rement None None	mechatronic p nd project work communication	oroduct of the control of the contro	levelop -orient cumen	oment. O ed projectation ch	ptimisation et manage nannels. F	ment tech	niques, pre	esentatio of stud
4 5	Contents: Structuri product of technique basics. Forms of Project Participat Formal: Content: Forms of Term par	ing of ta developmes, tech teaching: ion requi	rement None None ont:	mechatronic p nd project work communication s:	oroduct of the control of the contro	develop -oriento cumen	oment. O ed projectation ch	ptimisation et manage nannels. F	ment tech	niques, pre	of stud
5 6	Contents: Structuri product of technique basics. Forms of Project Participat Formal: Content: Forms of Term participat oral example oral example contents.	teaching: assessme	rement None None None ten ex	mechatronic p nd project work communication	oroduct of and do	develop -oriento cumen	oment. O ed projectation ch	ptimisation et manage nannels. F	ment tech	niques, pre	of stud
5 6	Contents: Structuri product of technique basics. Forms of Project Participate Formal: Content: Forms of Term pay oral exart Prerequise Module of the contents.	teaching: assessmer per, write mination ite for the examina	rement None None ent: ten ex or exa e award tion pa	a mechatronic p nd project work communication s: amination, com amination durin d of credit points: ass	oroduct of and do	exami	oment. O ed project tation ch	ptimisation et manage nannels. F	ment tech	niques, pre	of stud
4 5 6	Contents: Structuri product of technique basics. Forms of Project Participat Formal: Content: Forms of Term pa oral exan Prerequis Module Application	teaching: teaching: teaching: assessme per, write mination ite for the examina on of the	rement a nical of None None ent: ten exacte awards tion par modulo	a mechatronic p nd project work communication s: amination, com amination durin l of credit points:	oroduct of and do	exami	oment. O ed project tation ch	ptimisation et manage nannels. F	ment tech	niques, pre	of stud
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4 5 6 7 8	Contents: Structuri product of technique basics. Forms of Project Participate Formal: Content: Forms of Term participate and example Application Mechatron according product of the content of the conte	assessment ite for the examination of the onics (B) ce of the g to BR	rement a nical of None None ent: ten ex or exa example aution par module .Sc.)	amination, communication during dof credit points:	and do	exami	oment. O ed project tation ch	ptimisation of manage nannels. F	ment tech	niques, pre	of stud
3 4 5 6 7 8 9	Contents: Structuri product of technique basics. Forms of Project Participate Formal: Content: Forms of Term participate Module of Application Module of Contents.	teaching: teaching: teaching: assessme per, writ mination ite for the examina on of the onics (B ce of the g to BR) Officer:	rement a nical of the nical of	amination, combamination during of credit points: ass e (in the following for the final grade:	and do	exami	oment. O ed project tation ch	ptimisation of manage nannels. F	ment tech	niques, pre	of stud
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4 5 6 7 8	Contents: Structuri product of technique basics. Forms of Project Participate Formal: Content: Forms of Term participate Module of Application Module of Contents.	assessment ite for the examination of the onics (B to BR) of the g to BR) of the control of the g to BR.	rement None None None ent: ten ex or exa e award tion pa module .Sc.) grade f PO aus Di	amination, combamination during of credit points: ass e (in the following for the final grade:	and do	exami	oment. O ed project tation ch	ptimisation of manage nannels. F	ment tech	niques, pre	esentation of students
4 5 6 7 8 9	Contents: Structuri product of technique basics. Forms of Project Participate Formal: Content: Forms of Term participate Module of Application Module of Prof. Dr.	assessment teaching: teaching: teaching: teaching: teaching: assessment teaching:	rement None None None ent: ten ex or exa e award tion pa module .Sc.) grade f PO aus Di	amination, combamination during of credit points: ass e (in the following for the final grade:	and do	exami	oment. O ed project tation ch	ptimisation of manage nannels. F	ment tech	niques, pre	esentation of students

Proj	ect 4 with	Communica	ation Aspects							PR4	
lden num	tification ber:	Workload	Credit	ts:	Study	semes	ter:	Frequency offer	of the	Duratio	on:
1225	5	150 h	5		4th s	em.		Annual (Summer	·)	1 sem.	
1	Course:		Planned g	roup si	izes	Scop	e	Actual of time / cl	assroom	Self-stuc	ly
	Lecture		60 student	ts		0	SCH	0	h	0	h
	Tuition in	n seminars	30 student	ts		0	SCH	0	h	0	h
	Exercise		20 student	ts		0	SCH	0	h	0	h
		or seminar	15 student	ts		2	SCH	30	h	120	h
		ed self-study outcomes/co	60 student	ts		0	SCH	0	h	0	h
		embers are	appreciated,	critic	ally qu	estion	ed and		The stu	dents con	tinuousl
	documer	embers are nt project s		critic ılts an	ally qu d defe	estion nd thei	ed and n. They	compared develop	The stu a basis fo	dents con or decision	tinuousl
3	Contents: Structuritasks antechnique	embers are nt project s and make of ing of more d work pro les, presenta	appreciated, teps and resu	critic ults an ey com	cally quad defer apile the	chatror ment arcommi	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	tinuousl -making of large nagemer
3	Contents: Structuri tasks an techniqu with cha	embers are nt project s and make of ing of more d work pro les, presenta	appreciated, teps and resulecisions. The complex task cesses in production technique	critic ults an ey com	cally quad defer apile the	chatror ment arcommi	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	tinuousl -making of large nagemer
4	Contents: Structuri tasks antechniqu with cha	embers are nt project s and make of and make of teaching of more d work profes, presentallenging profeses.	appreciated, teps and resulecisions. The complex task cesses in prodution technique oject topics, e.	critic ults an ey com	cally quad defer apile the	chatror ment arcommi	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	tinuousl -making of large nagemer
4	Contents: Structuri tasks antechniqu with cha	embers are nt project s and make of and make of ing of more d work pro les, presenta llenging pro teaching:	appreciated, teps and resulecisions. The complex task cesses in production technique oject topics, e.	critic ults an ey com	cally quad defer apile the	chatror ment arcommi	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	tinuousl -making of large nagemen
4	Contents: Structuritasks and technique with characteristic participate Formal:	embers are nt project s and make of and make of ing of more d work pro les, presenta llenging pro teaching:	appreciated, teps and resulteristers. The complex task cesses in production technique oject topics, e.	critic ults an ey com	cally quad defer apile the	chatror ment arcommi	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	tinuousl -making of large nagemen
4	Contents: Structuritasks and technique with charmed in the second in the	embers are nt project s and make of and make of ing of more d work pro les, presenta llenging pro teaching:	appreciated, teps and resulecisions. The complex task cesses in production technique oject topics, e.	critic ults an ey com	cally quad defer apile the	chatror	ed and m. They et result nic produ nd proje unication	compared. develop and draw a act develop ct work. The and documents	The study of the s	dents confor decision onclusion. otimisation oroject man	of large
4 5	Contents: Structuri tasks and technique with characterists Forms of Project Participate Formal: Content: Forms of	embers are nt project s and make of and make of and make of the second s	appreciated, teps and resulted	criticallts and criticallts an	cally quad defer apile the	chatror ment an commi	nic product project pr	compared. develop and draw a act develop ct work. The and document dynamic	The study of the s	dents comported decision on clusion.	of largenagemen. Dealin
4 5	Contents: Structuri tasks antechniqu with char Forms of Project Participat Formal: Content: Forms of Term pa	embers are nt project s and make of and ma	appreciated, teps and resulted	criticallts and a comb	cally quad defer apple the sin medevelopichnical afflict maintain	chatror ment an comminanagen	nic product project pr	compared. develop and draw a act develop ct work. The and document dynamic	The study of the s	dents comported decision on clusion.	of largenagemen. Dealin
5 66	Contents: Structuri tasks antechnique with charmed in the content	embers are nt project so and make of and m	appreciated, teps and resulterisions. The complex task cesses in production technique oject topics, examination, examination ovard of credit powers.	comb	cally quad defer apple the sin medevelopichnical afflict maintain	chatror ment an comminanagen	nic product project pr	compared. develop and draw a act develop ct work. The and document dynamic	The study of the s	dents comported decision on clusion.	of largenagemen. Dealin
	Contents: Structuritasks and technique with characteristic participate Formal: Content: Forms of Term participate oral example oral example oral example deposits and the contents or the cont	embers are nt project so and make of and make of and make of and make of an and make of an another teaching: teaching: tion requirem No No assessment: per, written mination or ite for the avexamination on of the mo	appreciated, teps and resulted	criticalts and combon c	cally quad defended the sin medevelopic character in the sin material control in the control in	chatror ment an comminanagen	nic production project result is a project result is a project result in the project result is a project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project resul	compared. develop and draw a act develop ct work. The and document dynamic	The study of the s	dents comported decision on clusion.	of largenagemen. Dealin
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4 5 6	Contents: Structuri tasks an techniqu with cha Forms of Project Participat Formal: Content: Forms of Term pa oral exan Prerequis Module Applicati Mechatr Important	embers are not project so and make of and make of and make of an and make of an another project so and make of an another project so assessment: per, written mination or interfer the avexamination of the moonics (B.Scoce of the grade ground to the project so and the project so	appreciated, teps and resulted	criticalts and combined combin	cally quad defendable the sin medevelopic chical inflict materials of the control	chatror ment an comminanagen	nic production project result is a project result is a project result in the project result is a project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project result in the project result is a project result in the project resul	compared. develop and draw a act develop ct work. The and document dynamic	The study of the s	dents comported decision on clusion.	of largenagemen. Dealin

11	Other information:
12	Language:
	German

Spe	cialist Proje	ect with Mark	eting Aspects						PR5	
Iden num	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the	Duratio	on:
129′	7	150 h	5	5th	sem.		Annual (Winter))	1 sem.	
1	Course:		Planned group s	sizes	Scop	e		contact lassroom	Self-stud	ly
	Lecture		60 students		0	SCH	0	h	0	h
	Tuition ir	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		2	SCH	30	h	120	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	petences:							
3		a targeted and	ation and docum d balanced mann							
	sales str behaviou	uctures, comp ar. Difference	em areas/project pany culture, gen s and similarities composition (indi-	neral teo s betwe	chnolog en stud	y develo ent proje	opment, e	tc. Strateg	ic problen ojects. Pot	n-solvi
4	Forms of	teaching:								
5	Project	ion requiremen	te:							
,	Formal:	Non-								
	Content:	None	-							
5		assessment:	-							
,	Term pa	per, written ex	xamination, com			nation, p	erforman	ce examina	ation, proje	ect wor
7	Prerequis		d of credit points:	5 the CO	4130					
3	Applicati		le (in the following	g study p	rogramr	nes)				
9			for the final grade:							
,	_	g to BRPO	ioi ilic ililai gidue.							
10	Module C	Officer:	Ni al con-							
11	Other info	Ing. Klaus Dormation:	игкорр							
1.0	т.									
12	Language German									

Qua	lity Manag	gement							QM	
Ident	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency offer	of the	Duratio	on:
1229)	150 h	5	4th o	or 6th se	em.	Annual (Summer))	1 sem	
1	Course:		Planned group s	izes	Scop	e	Actual co		Self-stud	dy
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	in terms	s of quality-o	hese tools along to priented and cost m management to egrative way of the	t-minim asks in	ising c quality	orporate y manag	e managen gement. Ur	nent. Acc	quire the a	ability t y qualit
3	eight pri areas o manager quality o	of the QM co nciples of QM f procurement, measure objectives and	ncept, overview of I, elaboration of t nt, incoming go es/programmes fo key figures (bala ner and supplier r	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for the project of
3	History eight pri areas o manager quality o benchma	of the QM co inciples of QM f procurement, measure objectives and arking, custon	f, elaboration of t int, incoming go es/programmes fo key figures (bala ner and supplier r	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for th , project gement)
4	History eight pri areas o manager quality o benchma	of the QM co inciples of QM f procurement, measure objectives and arking, custon	f, elaboration of the int, incoming goes for grammes for key figures (balaner and supplier results). It is a supplier results to the interest of the interest	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for the project of
4	History eight pri areas o manager quality o benchma	of the QM co inciples of QM f procurement, measure objectives and arking, custon teaching: practicals and tion requirement	f, elaboration of the part of	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for the project of
4	History eight pri areas o manager quality o benchma Forms of Lecture, Participar Formal:	of the QM counciples of QM for procurement, measure objectives and arking, custon freaching: practicals and tion requirement.	f, elaboration of the int, incoming goes/programmes for key figures (balaner and supplier real exercises lats:	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for th , projecting ement
4 5	History eight pri areas o manager quality o benchma	of the QM counciples of QM for procurement, measured believes and arking, custon for teaching: Teaching: practicals and tion requirement. Non	f, elaboration of the int, incoming goes/programmes for key figures (balaner and supplier real exercises lats:	he esser oods, p r continu anced sc	ntial con roducti nous im orecard	ntents of on and aprovem d), quali	f the ISO 90 sales), p ent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa	y (especial orientation , idea mana	ly for th , projecting ement
4 5	Forms of Lecture, Participal Content:	of the QM counciples of QM for procurement, measured believing and arking, custon for teaching: practicals and tion requirement from Non for assessment:	f, elaboration of the int, incoming goes of the inc	he esser bods, pr continuanced sc relations	ntial con roducti uous im orecard (suppl	ntents of on and aprovem d), quali ier audit	the ISO 90 sales), pent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa ects.	y (especial orientation , idea mana atisfaction	ly for th , project agement analyse
4 5 6	Forms of Lecture, Participal Formal: Content:	of the QM conciples of QM for procurement, measure objectives and arking, custon frequirement fr	f, elaboration of to the int, incoming go to the int,	he esser bods, pr continuanced sc relations	ntial con roducti uous im orecard (suppl	ntents of on and aprovem d), quali ier audit	the ISO 90 sales), pent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa ects.	y (especial orientation , idea mana atisfaction	ly for th , project agement analyse
4 5 6	Forms of Lecture, Participal Content: Forms of Myritten Frequis Module	of the QM conciples of QM for procurement, measured bejectives and arking, custon frequirement Non Non assessment: examination, site for the awar examination procurement of the force of of	d, elaboration of the int, incoming goes programmes for key figures (balaner and supplier research of credit points: e e e e combination example of credit points: bass	he esser bods, p r continuanced so elations	ntial con roducti uous im orecard (suppl	ntents of on and aprovem d), quali- ier audit	the ISO 90 sales), pent (CIP, S ty costs, cu	000 famil process of ix Sigma, stomer sa ects.	y (especial orientation , idea mana atisfaction	ly for th , project agement analyse
	Forms of Lecture, Participal Forms of Written Prerequis Module Applicati Apparat	of the QM counciples of QM for procurement, measured believes and arking, custon arking, custon for practicals and tion requirement. Non for assessment: examination, site for the aware examination procurement in the council of the module of the formal council of the module of the council of the council of the module of the council of the module of the council of th	fl, elaboration of the int, incoming goes programmes for estable in the incoming goes programmes for the incoming goes programmes goes goes goes goes goes goes goes go	minatior	ntial con roduction in orecard (supples), perfo	ntents of on and aprovem d), quali- ier audit rmance	examinatio	n or oral	y (especial orientation , idea mana atisfaction	ly for the project of
4 5 6 7	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequising Module Application Apparat (B.Sc.)	teaching: practicals and ion requirement: examination, site for the awar examination proof the modulive Biotechno	f, elaboration of the int, incoming goes/programmes for key figures (balancer and supplier real devercises atts: e e e combination example of credit points: bass le (in the following control of	he esser bods, pr continuanced sc elations mination study pr gineering	ntial con roduction in orecard (supple)	ntents of on and aprovem d), quali- ier audit rmance	examinatio	n or oral	y (especial orientation , idea mana atisfaction	ly for the project of
4 5 7 8	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequising Module Application Apparat (B.Sc.)	teaching: practicals and iton requirement examination, site for the awar examination proof the modulive Biotechnoon of the grade ag to BRPO	d, elaboration of the triangle of	he esser bods, pr continuanced sc elations mination study pr gineering	ntial con roduction in orecard (supple)	ntents of on and aprovem d), quali- ier audit rmance	examinatio	n or oral	y (especial orientation , idea mana atisfaction	ly for the project of

11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Iden	ntification	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the	Duratio	n:
123	iber: 1	150 h	5		sem.		offer Annual (Winter)		1 sem.	
l	Course:		Planned group s	sizes	Scop	e	Actual time / c	lassroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h h	45	h
	Tuition i	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervis	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com			-1	-		-		
	•	The students i	know how mode ors	rn comp	uter ha	rdware v	works, esp	ecially		
	•	Based on the	concept of a Vor us basic architect			nputer, s	tudents ev	aluate and		
	•	-	explain how Von		_	ulators o	can be pro	grammed		
	•	They convert	number represen	tations	betwee	n any po	sition syst	tems.		
	•	They explain	the representatio				-			
	•	different bina They know m	ry codings. emory hierarchie	es and h	iis syste	ems and	advanced			
		architecture c	•	os una o	us syst	ms and	aavaneea			
	•		the computer arc comparison to con							
	•	=	nall programmin			_		•		
	•	-	small programm	_	_			aphics		
		processors (e.	g. using CUDA	C).						
3	Contents									
	•		erview of comput	ter archi	tecture	S				
	•	Von Neuman		1.1.						
	•		ital computers ar ning of processor		_		n lovol (- :	nagia11 !		
	•		ning of processor g of machine inst		_	transfe	i ievėi (es	pecially in		
	•		thmetic (ALUs, I			f numbe	rs and cha	racters)		
	•	Memory hiera	,	, .	9 -			,		
	•	Bus systems	•							
	•	Advanced arc	hitecture concep	ts (pipe	lines, o	ut-of-orc	ler executi	ion, etc.)		
	•	-	hitecture of grap	•	cessors					
	•		in IA32 assemb							
	•		of graphics proc	essors (e.g. via	CUDA	C)			
4		teaching:	d tanalis se C	.i 'C			4:1		1	22
			d teaching (exerc sks for the progr					ramming to	asks in IA3	02
5	Participa	tion requiremen	its:							
	Formal:	Non								_

	Content:	Basic computer science and programming knowledge
		Basic knowledge of digital technology
		Modules:
		1045 Digital Electronics II;
		1070 Digital Electronics I;
		1105 Computer Science 1
6	Forms of assessme	ent:
	Written examina	tion or oral examination
7	Prerequisite for the	e award of credit points:
	Module examina	tion pass
8	Application of the	module (in the following study programmes)
	Electrical Engine	eering (B.Eng.), Engineering Computer Sciences (B.Eng.) and Mechatronics (B.Sc.)
9	Importance of the	grade for the final grade:
	according to BR	PO
10	Module Officer:	
	Prof. DrIng. W	olfram Schenck
11	Other information:	
	Literature will be	e announced at the beginning of the course.
12	Language:	
	German	

	omatic Con	trol Engineer	ing						RT	
Iden	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the	Duration	n:
1234	4	150 h	5	4th s	em.		Annual (Summer)		1 sem.	
1	Course:		Planned group si	zes	Scope)	Actual co		Self-stud	у
	Lecture		60 students		2	SCH	30	h	45	h
		seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/comp	petences:		•	•		•	,	•
	control to applicati	echnology. Er on areas.	ing control engin				_	-	_	
3	Contents:									
	system of elements transform	description, tr s, frequency nation, analys	trol engineering, ransfer elements, behaviour of the sis and synthesis ity, discontinuou	norma ransfer of anal	lisation eleme ogue aı	and lin nts, loc nd digita	earisation, cus curves d control le	time bel , Bode oop elem	naviour of diagram, ents, simul	transfer Laplace lation of
	controlle	-	ity, uiscommuou	is cont	ioners,	argrui				rs, state
4		ers.	try, discontinuou		Toners,	uigitai				rs, state
4	Forms of	teaching:								rs, state
4 5	Forms of Lecture,	ers.	l exercises			uigiai				rs, state
	Forms of Lecture,	teaching:	l exercises ts:		Toners,					rs, state
	Forms of Lecture, Participat	teaching: practicals and ion requiremen	l exercises ts:		Toners,					rs, state
	Forms of Lecture, Participat Formal: Content: Forms of	teaching: practicals and ion requiremen None None assessment:	l exercises ts:							
5	Forms of Lecture, Participat Formal: Content: Forms of Written of	teaching: practicals and ion requiremen None None assessment: examination, of	l exercises ts: e e combination exan				examination	n or oral e	examinatio	
5	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise	teaching: practicals and ion requiremen None None assessment: examination, of	l exercises ts: e combination exan d of credit points:	nination	ı, perfor		examination	n or oral e	examinatio	
5 6 7	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise module of	teaching: practicals and ion requiremen None None assessment: examination, of ite for the awar examination p	l exercises ts: e combination exan d of credit points: ass and course as	nination	a, perfor	rmance e	examination	n or oral e	examinatio	
5	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis module of Application	teaching: practicals and ion requiremen None None assessment: examination, of ite for the awar examination pon of the moduli	l exercises ts: e combination exan d of credit points: ass and course as le (in the following	nination sessme	n, perfor	rmance e	examination	n or oral e	examinatio	
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisis module of Application Apparati	teaching: practicals and ion requiremen None None assessment: examination, of ite for the awar examination pon of the moduly ve Biotechnol	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and I	nination sessme	n, perfor	rmance e	examination	n or oral e	examinatio	
5 6 7	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise module of Application Apparati Importance	teaching: practicals and ion requiremen None None assessment: examination, of the for the awar examination pon of the moduly ve Biotechnologe of the grade	l exercises ts: e combination exan d of credit points: ass and course as le (in the following	nination sessme	n, perfor	rmance e	examination	ı or oral e	examinatio	
5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise module of Application Apparati Important accordin	teaching: practicals and ion requiremen None None assessment: examination, dite for the awar examination pon of the moduly ve Biotechnology of the grade g to BRPO	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and I	nination sessme	n, perfor	rmance e	examination	n or oral e	examinatio	
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise module of Application Apparati Important accordin Module C	teaching: practicals and ion requiremen None None assessment: examination, of the for the awar examination pon of the moduly ve Biotechnologe of the grade g to BRPO Officer:	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and l for the final grade:	nination sessme	n, perfor	rmance e	examination	n or oral e	examinatio	
5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise module of Application Apparati Important accordin Module C	teaching: practicals and ion requiremen None None assessment: examination, of the for the awar examination proposed of the grade g to BRPO Officer: -Ing. Reinhard	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and l for the final grade:	ninatior sessme	n, perfor	rmance e	examination	n or oral e	examinatio	
5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis module of Application Apparati Important accordin Module Of Prof. Dr. Other info	teaching: practicals and ion requiremen None None assessment: examination, of ite for the awar examination p on of the moduly ve Biotechnologe of the grade g to BRPO Officer: -Ing. Reinhar ormation:	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and I for the final grade:	ninatior sessment study pr Mechati	nt rogramm ronics (rmance e	examination	n or oral e	examinatio	
5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis module of Application Apparati Important accordin Module Of Prof. Dr. Other info	teaching: practicals and ion requiremen None None assessment: examination, of the for the awar examination pon of the moduly ve Biotechnologe of the grade g to BRPO Officer: -Ing. Reinhamormation: re will be annoted.	l exercises ts: e combination exan d of credit points: ass and course as le (in the following logy (B.Sc.) and l for the final grade:	ninatior sessment study pr Mechati	nt rogramm ronics (rmance e	examination	n or oral e	examinatio	

KOU	otics								ROB	
Ident	ification per:	Workload	: Credits:	Study	y semes	ter:	Frequency	y of the	Duratio	on:
1240)	150 h	5	5th s	em.		Annual (Winter)		1 sem.	
1	Course:	1	Planned group s	sizes	Scop	e	Actual of time / contents	lassroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	robotics	and differen	nodal sensor system at approaches to rob g and working in ro	ot devel	lopmer	it. They	will thus b	ecome cap		
3	Contents	:								
3	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav	g content: bulators kinematics and inve e robots rs for mobil	ence and robotics	ıl founda	ntions)					
3	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching:	e robots ence and robotics robotics							
	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture,	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba	rse kinematics e robots ence and robotics robotics used teaching with e			ical cou	rse			
	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-bation requiren	e robots ence and robotics robotics used teaching with enems:			ical cou	rse			
4	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture,	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requirem No	e robots ence and robotics robotics used teaching with enemts: one athematics 1 and 2	exercises , Compu	s, pract			echanics,	Electrical	
4 5 5	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa Formal: Content:	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requiren No M En assessment:	e robots ence and robotics robotics used teaching with enents: one athematics 1 and 2, ngineering 1 and 2,	exercises , Compu Physics	s, pract	ence, Te	echnical M			on
4	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requiren No En assessment: examination site for the av	e robots ence and robotics robotics used teaching with enents: one athematics 1 and 2, n, combination examinated of credit points:	exercises , Compu Physics mination	s, pract	ence, Te	echnical M			on
4 5 6	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module	g content: pulators kinematics rd and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requirem M En assessment: examination ite for the av examinatio	e robots e robotics ence and robotics robotics used teaching with elents: one athematics 1 and 2, n, combination examinated of credit points: n pass and course a	exercises , Compu Physics mination	s, pract	ence, Te	echnical M			on
4 5	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Apparat	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requirer No En assessment: examination on of the mo ive Biotech	e robots e robotics ence and robotics robotics ased teaching with enerts: one athematics 1 and 2 ngineering 1 and 2, n, combination examinated of credit points: n pass and course a dule (in the following nology (B.Sc.), Ele	, Compu Physics mination assessme g study prectrical E	s, pract	ence, Te	examination	on or oral	examination	
4567	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.)	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requiren No En assessment: examination ite for the av examinatio on of the mo ive Biotech o, Mechatro	e robots ence and robotics robotics used teaching with enemts: one athematics 1 and 2, n, combination examinated of credit points: n pass and course a dule (in the following	, Compu Physics mination assessme g study prectrical Edustrial I	s, pract	ence, Te	examination	on or oral	examination	
6 7 8	Teachin - Manip - Robot - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Apparat (B.Eng.) Importan	g content: pulators kinematics and and inve e robots rs for mobil cial intellige riour-based ing robots teaching: seminar-ba tion requirer M En assessment: examinatio on of the mo ive Biotech of Mechatro ce of the gran g to BRPO	e robots ence and robotics robotics ased teaching with enents: one athematics 1 and 2 ngineering 1 and 2, n, combination examinates and course a dule (in the following nology (B.Sc.), Elenics (B.Sc.) and Inc.	, Compu Physics mination assessme g study prectrical Edustrial I	s, pract	ence, Te	examination	on or oral	examination	

11	Other information:
	Literature and other sources will be announced at the beginning of the course.
12	Language:
	German

Simu	lation Tec	hnology								SIM	
Identi numb	ification er:	Workload:		Credits:	Study	semeste	er:	Frequen	cy of the	Duration	1:
1244		150 h		5	5th se	em.		Annual (Winter		1 sem.	
1	Course:		Pl	anned group siz	es	Scope	:		contact classroom	Self-stud	V
	Lecture		60	students		2	SCH	30	h	45	h
	Tuition in	seminars	30	students		1	SCH	15	h	22.5	h
	Exercise		20	students		0	SCH	0	h	0	h
	Practical of	or seminar	15	students		1	SCH	15	h	22.5	h
	Supervise	d self-study	60	students		0	SCH	0	h	0	h

2 Learning outcomes/competences:

Students:

- have an overview of the different approaches to model-based development.
- create physical and electrical models and implement them in graphical form (as a block diagram, for example) in a simulation environment (such as MATLAB/Simulink).
- derive simulation parameters from the models and configure the simulation software accordingly.
- simulate physical and electrical models on a computer and evaluate the simulation results.
- compare simulated time curves of a model with the measured signals of a real system and assess the model quality and simulation accuracy.
- can discretise continuous-time models and implement them on an embedded system in the form of difference equations (z-superposition functions).
- understand the essential principles of one-step procedures and evaluate the different procedures in terms of efficiency, stability and accuracy.
- outline and explain one-step procedures (e.g. in the direction field).

3 Contents:

- Introduction to simulation technology.
- Model-based development (software-in-the-loop, model-in-the-loop, hardware-in-the-loop and rapid control prototyping).
- Methods of modelling (types of models, physical modelling and representation in the form of block diagrams).
- Modelling of mechanical systems and electrical circuits.
- Extended state form and introduction of the descriptor form.
- Structural singularities and algebraic loops.
- Introduction in the sampling systems (difference equations and z- transformation)
- One-step procedures (Euler procedure, Heun procedure, family of Runge-Kutta procedures).
- Stability and accuracy of one-step procedures.
- Simulation practical course

4	Forms of teaching	y. :
	Lecture, semina	r-based teaching with exercises, practical course
5	Participation requ	irements:
	Formal:	None
	Content:	Modules:
		1233 Automatic Control Engineering;
6	Forms of assessm	ent:
	Written or oral	examination; in each case with preliminary examination performance
7	Prerequisite for th	ne award of credit points:
	Module examin	ation pass with preliminary examination
8	Application of the	e module (in the following study programmes)
		neering (B.Eng.), Engineering Computer Sciences (B.Eng.) and Mechatronics (B.Sc.)
9	Importance of the	grade for the final grade:
	according to BR	PO PO
10	Module Officer:	
	Prof. DrIng. M	Iartin Kohlhase
11	Other information	n:
	Literature will b	be announced at the beginning of the course.
12	Language:	
	German	

Tecl	hnical Mec	hanics 1							TM1	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency offer	of the	Duratio	on:
126	0	150 h	5	1st s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group s	izes	Scope	e	Actual co		Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
		ed self-study outcomes/comp	60 students		0	SCH	0	h	0	h
	Skills: C	alculation of r	s of rigid bodies, nechanical loads	s, design				1		
		e tools: Excel,	g of mechanical s Matlab	systems						
3	Contents: Introduc Mechani Internal	e tools: Excel, tion, force, m ical equilibriu forces. Hooke	Matlab noment. Basic op m. Rope, pendu 's law, temperatu	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
3	Contents: Introduc Mechani Internal	tion, force, mical equilibriu forces. Hooke beam bending	Matlab noment. Basic of m. Rope, pendu	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
	Contents: Introduc Mechani Internal Straight Forms of	tion, force, mical equilibriu forces. Hooke beam bending	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
	Contents: Introduc Mechani Internal Straight Forms of Lecture,	tion, force, mical equilibrium forces. Hooke beam bending teaching:	Matlab noment. Basic op m. Rope, pendu 's law, temperatu s. Second momen	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
4	Contents: Introduc Mechani Internal Straight Forms of Lecture,	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts:	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
4	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen l exercises ts:	peration ılum ro ıre strair	d, pulle 1.	ey. Inter	mediate re			
4	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat Formal: Content: Forms of	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and ion requirement None None assessment:	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen l exercises ts:	peration ulum ro ure strain at of area	d, pullo	ey. Inter	mediate re	eactions.	Centre of	gravity
4 5	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and ion requirement None None assessment: examination, cite for the award	Matlab noment. Basic op m. Rope, pendu 's law, temperatu c. Second momen exercises ts:	peration ulum ro ure strain nt of area	d, pullo	ey. Inter	mediate re	eactions.	Centre of	gravity
5	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Application	tion, force, mical equilibrius forces. Hooke beam bending teaching: practicals and ion requirement. None None assessment: examination, cite for the award examination p	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts:	peration ulum ro ure strain at of area	d, pullo	ey. Inter	mediate re	eactions.	Centre of	gravity
4 5 6	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Application Importance	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and ion requirement. None assessment: examination, coite for the aware examination pon of the modul onics (B.Sc.) ce of the grade for	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts: combination exar d of credit points: hass and course as	peration ulum ro ure strain nt of area mination ssessme	d, pullo	ey. Inter	mediate re	eactions.	Centre of	gravity
45678	Contents: Introduc Mechani Internal Straight Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis Module of Application Important accordin Module of	tion, force, mical equilibriu forces. Hooke beam bending teaching: practicals and ion requirement None assessment: examination, cite for the award examination pon of the modul onics (B.Sc.) ce of the grade for th	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts: combination exar d of credit points: ass and course as e (in the following for the final grade:	peration ulum ro ure strain nt of area mination ssessme	d, pullo	ey. Inter	mediate re	eactions.	Centre of	gravity
4 5 6 7 8 9	Contents: Introduce Mechani Internal Straight Forms of Lecture, Participate Formal: Content: Forms of Written of Prerequise Module of Application Mechatrol Important according Module of Prof. Dr. Other info	tion, force, mical equilibrius forces. Hooke beam bending teaching: practicals and ion requirement. None None assessment: examination, content for the aware examination pon of the modulonics (B.Sc.) ce of the grade of the gra	Matlab Matlab Moment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts: e combination exar d of credit points: ass and course as e (in the following for the final grade:	peration ulum ro ure strain at of area mination ssessme	d, pullon. a. Paralon, performate rogramm	rmance e	mediate re	eactions.	Centre of	gravity
4 5 6 7 8 9	Contents: Introduce Mechani Internal Straight Forms of Lecture, Participate Formal: Content: Forms of Written of Prerequise Module of Application Mechatrol Important according Module of Prof. Dr. Other info	tion, force, make the tools: Excel, tools: E	Matlab noment. Basic op m. Rope, pendu 's law, temperatu . Second momen exercises ts: combination exar d of credit points: ass and course as e (in the following for the final grade:	peration ulum ro ure strain at of area mination ssessme	d, pullon. a. Paralon, performate rogramm	rmance e	mediate re	eactions.	Centre of	gravity

Tecl	nnical Mecl	hanics 2							TM2	
Iden	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequenc offer	y of the	Duration:	
126	1	150 h	5	2nd	sem.		Annual (Summer)		1 sem.	
1	Course:		Planned group si	izes	Scop	e	Actual time / c teachin	lassroom	Self-stud	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	Skills: Cand mom	alculation of nents	plane movements	Learning outcomes/competences: Technical contents: Kinematics, kinetics Skills: Calculation of plane movements, calculation of movement processes under the impact of for and moments Knowledge: Understanding kinematic processes						
	Contents: Straight-line movements. Plane movements. Circular movements. Principle of linear movement Varignon's theorem. Moment of inertia. Parallel axis theorem. Translation. Rotation. Dynamics of discrete systems. Stiction, friction. Conversion of Energy. Power. Oscillator with one degree of									
3	Straight- Varignor	line movemen's theorem. I	ents. Plane move Moment of inerti	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics of
3	Straight- Varignor discrete	line movemen's theorem. Is systems. Stice	ents. Plane move Moment of inerti	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics of
	Straight- Varignor discrete freedom.	line movemen's theorem. Is systems. Stice	ents. Plane move Moment of inertiction, friction. Co	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics of
	Straight- Varignor discrete freedom. Forms of Lecture,	line movemen's theorem. It systems. Stick teaching: practicals and ion requirements.	ents. Plane move Moment of inertiction, friction. Co	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics of
4	Straight- Varignor discrete freedom. Forms of Lecture,	line movemen's theorem. It systems. Stick teaching:	ents. Plane move Moment of inertiction, friction. Co	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics o
4	Straight- Varignor discrete freedom. Forms of Lecture, Participati Formal: Content:	line movemen's theorem. Is systems. Stick teaching: practicals and ion requirement. Non-	ents. Plane move Moment of inertiction, friction. Co	a. Para	llel axi	s theorei	m. Transl	ation. Rot	ation. Dyn	namics of
4	Straight- Varignor discrete freedom. Forms of Lecture, Participate Formal: Content:	line movemen's theorem. Is systems. Stick teaching: practicals and ion requirement. Non-Non-assessment:	ents. Plane move Moment of inertiction, friction. Con dexercises tts:	a. Para	llel axi	s theorer	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
5	Straight- Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written 6	line movemen's theorem. It is systems. Stick teaching: practicals and ion requirement. Non-assessment: examination,	ents. Plane move Moment of inertiction, friction. Control describes tts: e e combination exam	a. Para	llel axi	s theorer	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
4 5	Straight- Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written e	line movemen's theorem. It is systems. Stick teaching: practicals and ion requirement. Non Non assessment: examination, ite for the awar	ents. Plane move Moment of inertiction, friction. Co	a. Para	n, perfo	s theorer	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
4 5 6 7	Straight- Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written of Prerequisi	line movemen's theorem. It systems. Stick teaching: practicals and it is in requirement. Non assessment: examination, ite for the awarexamination process.	ents. Plane move Moment of inertiction, friction. Con I exercises etts: e e combination exam d of credit points: bass and course as	a. Para	n, perfo	s theorer Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
5	Straight-Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written of Prerequisis Module of Application	line movemen's theorem. I systems. Stick teaching: practicals and ion requirement Non Non assessment: examination, ite for the awar examination pon of the module.	ents. Plane move Moment of inertiction, friction. Co	a. Para	n, perfo	s theorer Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
4 5 6 7	Straight- Varignor discrete freedom. Forms of Lecture, Participate Formal: Content: Forms of Written e Prerequisi Module e Application Mechatro	line movemen's theorem. I systems. Stick teaching: practicals and ion requirement. Non-assessment: examination, ite for the aware examination points (B.Sc.) the of the grade.	ents. Plane move Moment of inertiction, friction. Con I exercises etts: e e combination exam d of credit points: bass and course as	a. Para onversi minatio ssessme	n, perfo	s theorer Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of
4 5 6 7 8	Straight-Varignor discrete freedom. Forms of Lecture, Participate Formal: Content: Forms of Written of Written of Application Mechatro according	line movements theorem. It is systems. Stick teaching: practicals and ion requirements. Non-assessment: examination, ite for the awar examination proposed for the modulus (B.Sc.) are of the grade g to BRPO	ents. Plane move Moment of inertiction, friction. Con el exercises elee combination examed of credit points: bass and course as le (in the following	a. Para onversi minatio ssessme	n, perfo	s theorer Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	aamics o
5 6 7 8	Straight-Varignor discrete freedom. Forms of Lecture, Participating Formal: Content: Forms of Written of Written of Application Mechatro according Module of	line movemen's theorem. It systems. Stick teaching: practicals and it is in requirement. Non assessment: examination, it is for the aware examination proof the modulonics (B.Sc.) are of the grade g to BRPO Officer:	ents. Plane move Moment of inertiction, friction. Con I exercises etts: e e combination exam of of credit points: bass and course as le (in the following for the final grade:	a. Para onversi minatio ssessme	n, perfo	s theorem Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	aamics o
4 5 6 7 8 9	Straight-Varignor discrete freedom. Forms of Lecture, Participating Formal: Content: Forms of Written of Written of Application Mechatro according Module Of Prof. Dr.	line movemen's theorem. It systems. Stick teaching: practicals and it is in requirement. Non assessment: examination, it is for the aware examination proof the modulonics (B.Sc.) the of the grade g to BRPO officer: -Ing. Heinrich	ents. Plane move Moment of inertiction, friction. Con I exercises etts: e e combination exam of of credit points: bass and course as le (in the following for the final grade:	a. Para onversi minatio ssessme	n, perfo	s theorem Energy.	m. Transl Power. C	ation. Rota	ation. Dyn	aamics o
4 5 6 7 8	Straight-Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written of Prerequisis Module of Application Mechatro according Module of Prof. Dr. Other info	line movements theorem. It is systems. Stick teaching: practicals and it is practicals and it is in requirement Non- assessment: examination, it is for the aware examination proposed (B.Sc.) are of the grade ground to BRPO officer: -Ing. Heinrick teaching to BRPO officer:	ents. Plane move Moment of inertiction, friction. Con I exercises Its: I exercises Its: I exercises Its: I exercises Its: I exercises I ex	minatio ssessme	n, perfo	rmance o	m. Transl Power. C	ation. Rota	ation. Dyn	aamics o
4 5 6 7 8 9	Straight-Varignor discrete freedom. Forms of Lecture, Participati Formal: Content: Forms of Written of Prerequisis Module of Application Mechatro according Module of Prof. Dr. Other info	line movements theorem. It is systems. Stick teaching: practicals and it is practicals and it is practicals and it is practicals and it is practical and it is practic	ents. Plane move Moment of inertiction, friction. Con I exercises etts: e e combination exam of of credit points: bass and course as le (in the following for the final grade:	minatio ssessme	n, perfo	rmance o	m. Transl Power. C	ation. Rota	ation. Dyn	lamics of

Identifinumbe 1263	fication er:	Workload:	Credits:							
1263	21.		Credits: Stu		Study semester:			Frequency of the offer		ion:
1		150 h	5	4th s	4th sem.			er)	1 sem	l.
-	Course:		Planned group s	izes	Scop	e e	Actual contact time / classroom		Self-stu	dy
F	Lecture		60 students		0	SCH	teachin 0	h h	0	h
	Tuition in	n seminars	30 students		4	SCH	60	h	90	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		0	SCH	0	h	0	h
	•	ed self-study outcomes/comp	60 students		0	SCH	0	h	0	h
3	Personal English	resent them significant them significant and mail competence: sources.	competence: The hortly and concile ake a critical asse	sely bo essment.	oth in	speaking	and in v	writing. T	hey establ	lish wid
	- T op sy They po product;	hey master en perations; dim ystems and Ind ssess interdisc managing pro	tively participate ngineering-releval ensions and shap lustry 4.0). iplinary skills (e. pjects; designing	es; forc	iinolog es and issing i	y (e.g. n mechani readings	nanufactu sms; prop and trend	perties of n	naterials; a	automate
4	Forms of teaching: Seminar-based teaching / individual and group work, etc. / semester project (Assignment)									
5	Participat	tion requiremen	ts:							
	Formal:		ılar attendance (7	70%) an	d activ	e particip	oation			
	Content:		ish language com nework for Langu		e: B1.2	(accordi	ing to the	European	Reference	;
6		assessment:		,						

7	Prerequisite for the award of credit points:
	Passed semester project and written exam
8	Application of the module (in the following study programmes)
	Apparative Biotechnology (B.Sc.) and Mechatronics (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	OStR Cornelia Biegler-König
11	Other information:
	Literature will be announced at the beginning of the course. Textbook, additional
	materials, intranet self-study courses
12	Language:
	English

Text	ile Technol	logies							TEX		
	Identification Workload:		Credits: Study		dy semester: Frequency o			y of the	Duratio	on:	
6004	l	150 h	5	4th o	or 6th sem.		Annual (Summe	r)	1 sem		
1	Course:		Planned group si	zes	Scope	e		contact lassroom	Self-stud	dy	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	seminars	30 students		2	SCH	30	h	45	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical of	or seminar	15 students		0	SCH	0	h	0	h	
	Supervise	d self-study	60 students		0	SCH	0	h	0	h	
2	Describit importan	t textile testin	chain, comparing procedures and chain independe	l recent							
3	Contents:										
	narrow intelliger	textiles, finis	r spinning, secon hing, manufacturextiles; physical search topics alor	re; tex	tile m	achines operties	; sustaina	ability in	the textil	le chain;	
4	Forms of	teaching:									
		hands-on sem									
5		on requirement	s:								
	Formal:										
	Content:										
6		assessment:									
	Project work										
7	_		d of credit points:								
0		examination p		J							
8			e (in the following		-				Eng. 1	T., J 1	
	Apparative Biotechnology (B.Sc.), Mechatronics (B.Sc.), Renewable Energies (B.Eng.) and Industrial										
9	Engineering and Management (B.Sc.) Importance of the grade for the final grade:										
-		•	8-11301								
	according to BRPO Module Officer:										
10	Prof. Dr. Andrea Ehrmann										
10		fficer:	hrmann								
10		fficer: Dr. Andrea E	hrmann								
	Prof. Dr.	officer: Dr. Andrea E ormation:	hrmann								

Identification number: 1276				Frequency of the offer		Duration:						
		150 h	150 h 5		6th sem.			r)	1 sem.			
1	Course:		Planned group s	Planned group sizes		e	Actual time / c teachin	lassroom	Self-study			
	Lecture		60 students		3	SCH	45	h	67.5	h		
	Tuition is	n seminars	30 students		1	SCH	15	h	22.5	h		
	Exercise		20 students		0	SCH	0	h	0	h		
	Practical	or seminar	15 students		0	SCH	0	h	0	h		
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h		
2	Learning	outcomes/cor	mpetences:									
		 courses and identify differences. apply the central contents to selected practical examples and case studies and independently solve the associated tasks and present the results. critically reflect on the special features and tasks of sales and distribution management. recapitulate the course content independently and deepen their knowledge through self-study. Ideally, they form learning groups which last throughout the entire period of study. 										
	•	solve the ass critically ref recapitulate	lect on the special the course content	present feature indepe	the resustant tandently	ults. asks of sa and dee	ales and di	stribution knowledge	manageme through s	ent.		
3	Contents 4. 5. 6. 7. 8. 9.	solve the ass critically ref recapitulate Ideally, they : Introduction management Sales management Sales management Sales management Sales management	n – Distribution and to distribution are gement as a composite gement in consuming gement in industrial attionship manage	present feature indepe oups wh d sales and sales onent of onent of er good al goods	in the comanage the market smarket sma	ults. asks of sa and dee throughe context of ement sic strate arketing r	des and dipen their out the en	stribution knowledge tire period g: from di pt es of opera	manageme e through s l of study.	ent. elf-stud		
	Contents 4. 5. 6. 7. 8. 9. 10.	solve the ass critically ref recapitulate Ideally, they : Introduction management Sales management Sales management Sales management Sales management Sales management Sales management Sales management Sales management	n – Distribution and to distribution are gement as a composite gement in consuming gement in industrial attionship manage	present feature indepe oups wh d sales and sales onent of onent of er good al goods ment (C	in the comanage the market smarket sma	ontext of ement sic strate; arketing rets ets	f marketingic concemix: Basic	stribution knowledge tire period g: from di pt es of opera	manageme e through s l of study.	ent. elf-stud		
4	Contents 4. 5. 6. 7. 8. 9. 10. Forms of Lecture,	solve the ass critically ref recapitulate Ideally, they : Introduction management Sales management Sales management Sales management Sales management Sales management Sales management Sales management Sales management	n – Distribution and to distribution are gement as a composite gement in consuming gement in industributionship manage is of selling	present feature indepe oups wh d sales and sales onent of onent of er good al goods ment (C	in the comanage the market smarket sma	ontext of ement sic strate; arketing rets ets	f marketingic concemix: Basic	stribution knowledge tire period g: from di pt es of opera	manageme e through s l of study.	ent. elf-stud		
4	Contents 4. 5. 6. 7. 8. 9. 10. Forms of Lecture, Participa Formal:	solve the ass critically ref recapitulate Ideally, they Introduction managemen Sales manag managemen Sales manag Business rei Foundations teaching: seminar-bas	n – Distribution and to distribution are gement as a composite gement in consum gement in industrial attonship manage is of selling.	present feature indepe oups who desales onent of onent of al goods ment (Coexercise	in the comanage the bas smarkes markes smarkes, case	ults. asks of sa and dee through context of ement sic strate arketing r ets ets astomer I	des and dipen their out the en f marketingic concemix: Basic	g: from dies of opera	management through solver through so	ent. elf-stud		
1	Contents 4. 5. 6. 7. 8. 9. 10. Forms of Lecture, Participa Formal: Content:	solve the ass critically ref recapitulate Ideally, they Introduction managemen Sales manag managemen Sales manag Business rei Foundations Iteaching: seminar-bas tion requirement No ide	n – Distribution and to distribution are gement as a composite gement in consum gement in industributionship manage is of selling.	present feature indepe oups who desales onent of onent of al goods ment (Coexercise	in the comanage the bas markes markes markes, case	ults. asks of sa and dee through context of ement sic strate arketing r ets ets astomer I	des and dipen their out the en f marketingic concemix: Basic	g: from dies of opera	management through solver through so	ent. elf-stud		
1	Contents 4. 5. 6. 7. 8. 9. 10. Forms of Lecture, Participa Formal: Content: Forms of	solve the ass critically ref recapitulate Ideally, they : Introduction managemen Sales manag managemen Sales manag Business ref. Foundations tion requirement No ide assessment:	n – Distribution and to distribution and gement as a composite gement in consuming gement in industrial ationship manage as of selling sed teaching with each sed teach sed teaching with each sed teaching with each sed teaching wi	present feature indepe oups who desales onent of onent of al goods ment (Coexercise	in the comanage the bas markes markes markes, case	ults. asks of sa and dee through context of ement sic strate arketing r ets ets astomer I	des and dipen their out the en f marketingic concemix: Basic	g: from dies of opera	management through solver through so	ent. elf-stud		
5	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequise	solve the ass critically ref recapitulate Ideally, they : Introduction management Sales ma	n – Distribution and to distribution and gement as a composite gement in consuming gement in industributionship manage as of selling sed teaching with each teaching with each teaching with each teach ally, knowledge of and of credit points:	present feature indepe oups who desales onent of onent of al goods ment (Coexercise	in the comanage the bas markes markes markes, case	ults. asks of sa and dee through context of ement sic strate arketing r ets ets astomer I	des and dipen their out the en f marketingic concemix: Basic	g: from dies of opera	management through solver through so	ent. elf-stud		
3 4 5 7 8	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module	critically refrecapitulate Ideally, they : Introduction management Sales	n – Distribution and to distribution and gement as a composite gement in consuming gement in industributionship manage as of selling sed teaching with each teaching with each teaching with each teach ally, knowledge of and of credit points:	present feature indepe oups who disales and sales onent of onent of onent of onent (Comment (in the comanage the bases markes mark	ults. asks of sa and dee through ontext of ement sic strate arketing r ets ets astomer I	des and dipen their out the en f marketingic concemix: Basic	g: from dies of opera	management through solver through so	ent. elf-stud		

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. Dr. rer. oec. Klaus Rüdiger
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Elec	ctive Modul	le							WM	
Iden num	tification ber:	Workload:	Credits:	y semest	er:	Frequency of the offer		Duration: 1 sem.		
900	2	150 h	5	5th	5th or 6th sem.					nester
1	Course:		Planned group s	izes	Scope	Scope		contact lassroom	Self-study	
	Lecture		60 students			SCH		h		h
	Tuition in	seminars	30 students			SCH		h		h
	Exercise		20 students			SCH		h		h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
		ed self-study	60 students			SCH		h		h
2	Learning	outcomes/com	petences:		·	•	•	•	•	
3	Contents:									
4	Forms of	teaching:								
5	Participation requirements:									
	Formal:	:								
	Content:									
6	Forms of	assessment:								
7	Prerequis	ite for the awar	rd of credit points:							
8	Applicati	on of the modu	le (in the following	study p	rogramn	nes)				
	~ ~	onics (B.Sc.)								
9	Importano	ce of the grade	for the final grade:							
10	Module C		\ 1							
11	Other info	-Ing. Klaus D	игкорр							
11	Other info	ormanon:								
12	Language	»:								
	German									

Mat	erial and C	omponent Te	sting						WBP		
Iden num	tification ber:	Workload:	Credits: Stud		y semest	er:	Frequency of the offer		Duration:		
1278		150 h	5		3rd or 5th sem.				1 sem	1 sem.	
1	Course:	Course:		Planned group sizes		e	Actual contact time / classroom teaching		Self-stu	dy	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	seminars	30 students		0	SCH	0	h	0	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical	or seminar	15 students		2	SCH	30	h	45	h	
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h	
3	testing. compone analyse	The students ent failures an a sub-problem	ess the transferab are able to appl d material charac n.	ly suita teristics	ble test . They	proced can syst	ures for t ematically	he analyti detect a c	cal exami omponent	nation of failure of	
	- L sq - Ir th - T au - M - M - B - M - D - P	egal regulation pecifications of the characterist echnological, and electromaga laterial identifications for the asics of dama leasuring equipesign of experoblem-solving and entire the control of the c	ns, standards, directimen manufact ic values thermal, rheolog metic material and fication, chromatore investigation of ge analysis ipment/test gauge riments	ectives, ure, spe ical, opt d compo ography ageing,	custom cimen g ical, ac onent te	geometry oustic a esting, spectros	rements, s y, test met nd radiation	pecification bed and to be an arrelated	ons and fur	nctional ters on	
4	Forms of	teaching:									
	Lectures	, exercises, pi	racticals								
5	Participat	ion requiremen	nts:								
	Formal:	Non									
	Content:	Non	e								
6		assessment:									
			combination exa	ninatio	or ora	l examii	nation				
7	Prerequis	ite for the awar									
_											
	Module examination pass 8 Application of the module (in the following study programmes)										
3				g study p	rogramn	nes)					

9	Importance of the grade for the final grade:
	according to BRPO
10	Module Officer:
	Prof. DrIng. Bruno Hüsgen
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German