Appendix B: Module catalogue

for the study programme Mechatronics B.Sc.

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Identification number: Workload: Credits: Study semester: Frequency of the offer Duratic offer 1291 360 h 12 6th or 7th sem. each semester 12 we 1 Course: Planned group sizes Scope Actual contact time / classroom Self-stu time / classroom Self-stu time / classroom 2 Ecture 60 students 0 weekly 0 h 0 2 Exercise 20 students 0 weekly 0 h 0 Practical or seminar 15 students 0 weekly 0 h 0 Supervised self-study 60 students 0 weekly 0 h 0 2 Learning outcomes/competences: With the bachelor thesis, each candidate demonstrates that he/she is able to cor practice-oriented task from his/her subject area within a specified period of time, b subject-specific details and in the interdisciplinary contexts, working independent according to scientific methods. 3 3 Contents: The bachelor thesis is usually an independent investigation with an engineering sc engineering technology task. It should deal with the subject matter in detailed descrip explanations 1 1 Forms of teaching:<	Bac	helor Thes	sis							BA	
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11 Other information:	10	Module of									
	11		ormation:								
12 Language: German											

Car	eer-Focus	sed Project							BOP	
Ident numl	ification per:	Workload:	Credits:	Stud	udy semester: Frequency of t offer		of the	Duratio	n:	
1019		150 h	5	1st s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group	sizes	Scop	e	Actual c time / cla teaching	assroom	Self-stuc	ly
	Lecture		60 students		0	weekly hours	0	h	0	h
	Sem. less	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		2	weekly hours	30	h	120	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
3	scientifi solution discuss project are able Contents - Overv - Class - Overv - Funda - Basic - Task c - Projec docur	ic work in proj in a guided g ed, distribute process and g to present te ification of the fiel ification of tasks in amentals of er s of scientific description ar ct manageme mentation, res	becialist field o ects and apply roup organisat d and criticised draw conclusic chnical facts a ds of activity a echatronics in ro the profession ngineering worl work ad structuring o nt techniques, p earch and sou olem-solving p	r metho ion. The d within ons and nd doc nd the elation nal fielo k f tasks presen rce wor	ods and e result the tea inferen ument everyd to othe d of me tation te	I tools for s of the v am. The s acces for t them. ay work o r engine chatronic	r the deve vork of the students he conclu of a mech ering dise cs	elopment e individu identify t usion and natronics ciplines	t of a mecl lal particip he next st I the outlo engineer nunicatior	natronic pants are eps of a ok. They
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7		examination		3.						
8	Applicatio	on of the modu ronics (B.Sc.)	le (in the following	g study	program	nmes)				
9	Importan		e for the final grad	de:						

according to BRPO Module coordinator:

Prof. Dr.-Ing. Klaus Dürkopp

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 11
 Other information:

 Literature will be announced at the beginning of the course.

 12
 Language:

 German

	iness Adn	ninistration							BWL	
lden [:] numl	tification ber:	Workload:	Credits:	Stud	y seme		Frequenc offer	y of the	Duratio	n:
102		150 h	5	2nd	or 4th		Annual (Summe	er)	1 sem.	
1	Course:		Planned group	sizes	Scop	De	Actual o time / c teachin	lassroom	Self-stud	dy
	Lecture		60 students		3	weekly hours	45	h	67.5	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
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102		150 h	5	5th	sem.		Annual (Winter)		1 sem	
1	Course:		Planned group	sizes	Scop	De	Actual of time / cl	assroom	Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
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dent	abase Ap	plications							DBA	
	ification	Workload:	Credits:	Study	y semes		Frequency offer	/ of the	Duratio	n:
numt 1041		150 h	5	6th s	sem.		Annual (Summe	r)	1 sem.	
1	Course:		Planned group	Planned group sizes		e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	acc - The ap mc Fra - Stu for - The ap	cording to giv e students ap olications in g odify data of mework). Idents will be databaseapp e students w	new data into ren criteria and pply technique group work acco a database an able to compar plications and w ill learn about d be able to clas	join tab s of we ording id to in e, com ill be at the ad	les acc b serv to the l sert ar bine an ble to p lvantag	cordingt rer prog Model-V nd query devalua lan and o	ramming ramming riew-Cor it via a te specif develop o	integrity (e.g. Ja troller-S web int ic metho database	/ rules. kartaEE) a oftware-P erface (Ja ods and teo e transactio	ind pla attem vascrij chnique ons.
3	- Bas	s: owledge of th sic concepts	e architecture, of relational and QL (Structured	d objec	ning ar t-relati	onal data		•	ns,	
3	- Kno - Bas - Intr - Use	s: owledge of th sic concepts oduction to S e of SQL to cr	of relational and GQL (Structured reate, delete, m	d objec I Query odify ar	ning ar t-relati Langu nd que	onal data age), ry data re	a models ecords,	,		s).
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4	- Kno - Bas - Intr - Uso - Intr - Co	s: owledge of th sic concepts oduction to S e of SQL to cr oduction to p nnection of d	of relational and GQL (Structured reate, delete, m programming dy	d objec I Query odify ar /namic b applic	ning ar t-relati Langu nd que web pa cations	onal data age), ry data re ages (e.g : using su	a models ecords, . Jakarta iitable ex	, EE, JSF, I amples.	Primeface	s),
-	- Kno - Bas - Intr - Uso - Intr - Co Forms of Lecture	s: owledge of th sic concepts oduction to S e of SQL to cr oduction to p nnection of d	of relational and GQL (Structured reate, delete, mo orogramming dy atabases in we s, project and g	d objec I Query odify ar /namic b applic	ning ar t-relati Langu nd que web pa cations	onal data age), ry data re ages (e.g : using su	a models ecords, . Jakarta iitable ex	, EE, JSF, I amples.	Primeface	s),

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 coordinator:
	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

Intro	oduction						tudy semester: Frequen			
	tification	Workload:	Credits:	Study	y semes		Frequenc	cy of the	Durat	ion:
num							offer:			
700	3	150	5	1st se	emester		Annual		1 sem.	
				<u> </u>			(Winter)			
1	Course:		Planned group sizes:		Scope:		Actual contact time/classroom		Self-stu	ldy
							teachin			
	Lecture		60 students		2	weekly	30	9 h	45	h
	Lootaro				-	hours	00		10	
	Sem. less	sons	30 students		2	weekly	30	h	45	h
						hours				
	Exercise		20 students			weekly hours		h		h
	Practical	or seminar	15 students		0	weekly	0	h	0	h
						hours				
	Supervise	ed self-study	60 students		1	weekly		h		h
						hours				
2	-	outcomes/com	•							
		-	knowledge of th			-	-			
		ristics. They wi	ll have an overvie	ew of how	w the va	rious tech	nical co		intoract a	nd what
								mponents	interact ar	
2		ncies exist.						mponents		
3	Contents	:	an overview of th							
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4 5 7 8 9	Contents The lecture trains, pa the most braking to dependen operation stakehold Forms of Participat Formal: Content: Form of a Oral example Module e Application Digital Ra Importan according	: rre will provide ssenger and fr important subs echnology, infr ncies of the ind h, logistics and ders involved ir teaching: tion requirement Basic assessment: mination site for the awa examination pa on of the modu ailway Systems ce of the grade	eight transport) a systems and com astructure as we dividual subsyste maintenance wil in the railway syste nts: knowledge of m rd of credit point ss ile (in the followin	ne variou and their nponents II as com ms will b I be cove em (com athemati	s railwa specific such a trol and e comm ered. An panies,	y systems characte s track gu safety teo nunicated overview authoritie	s (trams, t eristics. T lidance, p chnology. . In additi / of the ro s, etc.) w	undergrou here will b oower sup The relat on, aspec oles of the ill be provi	nd trains, s e an introd ply, drive a ionships a ts of railwa various ded.	suburban uction to and nd
4 5 7 8 9	Contents The lecture trains, pa the most braking to dependen operation stakehold Forms of Participat Formal: Content: Form of a Oral example Module e Application Digital Ra Importan according	: rre will provide ssenger and fr important subs echnology, infr ncies of the ind h, logistics and ders involved ir teaching: tion requirement Basic assessment: mination site for the awa examination pa on of the modu ailway Systems ce of the grade g to BRPO	eight transport) a systems and com astructure as we dividual subsyste maintenance wil in the railway syste nts: knowledge of m rd of credit point ss ile (in the followin	ne variou and their nponents II as com ms will b I be cove em (com athemati	s railwa specific such a trol and e comm ered. An panies,	y systems characte s track gu safety teo nunicated overview authoritie	s (trams, t eristics. T lidance, p chnology. . In additi / of the ro s, etc.) w	undergrou here will b oower sup The relat on, aspec oles of the ill be provi	nd trains, s e an introd ply, drive a ionships a ts of railwa various ded.	suburban uction to and nd
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4 5 6 7	Contents The lecture trains, pathermost braking to dependent operation stakehold Forms of Participat Formal: Content: Form of a Oral example Module of Application Digital Ra Important according	irre will provide ssenger and fri- important subs- echnology, infri- ncies of the ind- h, logistics and ders involved irr teaching: tion requirement Basic assessment: mination site for the awa examination pa on of the modu ailway Systems ce of the grade g to BRPO coordinator:	eight transport) a systems and com astructure as we dividual subsyste maintenance wil in the railway syste nts: knowledge of m rd of credit point ss ile (in the followin	ne variou and their nponents II as com ms will b I be cove em (com athemati	s railwa specific such a trol and e comm ered. An panies,	y systems characte s track gu safety teo nunicated overview authoritie	s (trams, t eristics. T lidance, p chnology. . In additi / of the ro s, etc.) w	undergrou here will b oower sup The relat on, aspec oles of the ill be provi	nd trains, s e an introd ply, drive a ionships a ts of railwa various ded.	suburban uction tc and nd
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	ctric Drive	Systems							EAS	
Iden [:] num	tification	Workload:	Credits:	Stud	y semes		Frequency offer	of the	Duratio	n:
1313		150 h	5	5th:	sem.		Annual (Winter)		1 sem.	
1	Course:		Planned group	sizes	Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
3	control	based on it. hem to the res	n for modelling They will be en spective applic	abled	-					
		nononte and l								
	 Torqu Desig Mode Spac Desig Mode Struc Struc Oper Beha Over 	actions of the ue formation in gn and operate elling and con e vector for the gn and operate elling and con ture and mod ating behavio viour of the A view of furthe	basic circuits of frequency inve in rotating elect ing behaviour of trol of the drive ing behaviour of trol of the drive lelling of the asy our of the ASM of SM during open r electrical actu	rters wi rical ma of DC m system of rotati of synch system ynchror on the ri ration w	th the r achines achine with D ng field nronous nwith P nous m igid net vith fred	mains an S C mach I machin S machin S M achine twork quency c	dmotor ines es nes	etbearir	ngs	
4	 Torqu Desig Mode Spac Desig Mode Struc Struc Oper Behar Over Forms of Lecture 	actions of the ue formation in gn and operate elling and con- e vector for the gn and operate elling and con- ture and mod ating behavior viour of the A- view of furthe f teaching: e, sem. lesson	frequency inve n rotating elect ing behaviour of trol of the drive description of ing behaviour of trol of the drive lelling of the asy our of the ASM of SM during open r electrical actu	rters wi rical ma of DC m systen of rotati of synch systen ynchror on the ri ration w uators, e	th the r achines achine nwith D ng field nronous nwith P nous m igid net igid net igid net	mains an S DC mach I machin I machin SM achine twork quency c zo drives	dmotor ines es nes	etbearir	ngs	
4	 Torqu Desig Mode Spac Desig Mode Struc Struc Oper Behar Over Forms of Lecture 	actions of the ue formation in gn and operate elling and con- e vector for the gn and operate elling and con- ture and mod ating behavior viour of the A- view of furthe feaching: e, sem. lesson tion requireme Elecci Scie 1070 (1076)	frequency inve n rotating elect ing behaviour of trol of the drive description of ing behaviour of trol of the drive lelling of the asy our of the ASM of SM during open r electrical actu- s with exercises nts: trical Engineerin nces, Industrial Engi 6 Mechatronics neering Compu	rters wi rical ma of DC m system of rotati of synch system ynchror on the ri ration w uators, e s and p ng I (10 ineering s), Elect	th the r achines achines achines achines ny the D nous m figid net vith frector again frector actica 73 Mec gand N ronics	nains an S S C machin I machin s machin s machine twork achine twork quency c zo drives I course chatronic fanagen (1063 Mi	d motor ines es hes converter s or magn cs, 1070 E hent), Elec echatroni	ngineerir strical Eng	ng Compu gineering and 1069	II
5	 Torqu Desig Mode Spac Desig Mode Struc Oper Behat Over Forms of Lecture Participa Formal: Content: 	actions of the ue formation in gn and operate elling and con- e vector for the gn and operate elling and con- ture and mod- ating behavior viour of the A- view of further f teaching: e, sem. lesson tion requireme Elecci Scie 1070 (1076 Engi Man f assessment:	frequency inve n rotating elect ing behaviour of trol of the drive ne description of ing behaviour of trol of the drive elling of the asy our of the ASM of SM during open r electrical actu- s with exercises nts: trical Engineerin nces, 0 Industrial Engi 6 Mechatronics neering Compu- agement)	rters wi rical ma of DC m system of rotati of synch system ynchror on the ri ration w Jators, e s and p ng I (10 ⁻ ineering s), Elect	th the r achines achines achine ny the product of the ractica ractica 73 Mec gand N ronics ences,	mains an s S C machin s machin s machine s machine twork quency c zo drives l course chatronic flanagen (1063 Ma 1065 Inc	d motor ines es hes converter s or magn cs, 1070 E hent), Elec echatroni	ngineerir strical Eng	ng Compu gineering and 1069	II
5	 Torqu Desig Mode Spac Desig Mode Struc Oper Behar Over Forms of Lecture Participa Formal: Content: 	actions of the ue formation in gn and operate elling and con- e vector for the gn and operate elling and con- ture and mod ating behavio viour of the A- view of furthe f teaching: e, sem. lesson tion requireme Elec: Scie 1070 (1076 Engi Man f assessment: aper, written e	frequency inve n rotating elect ing behaviour c trol of the drive description c ing behaviour c trol of the drive elling of the asy our of the ASM c SM during open relectrical actu s with exercises nts: trical Engineerin nces, 0 Industrial Engi 6 Mechatronics neering Compu- agement) examination or c	rters wi rical ma of DC m system of rotati of synch system (nchror on the ri ration w Jators, e s and p ngl (10 neering s), Elect uter Sci	th the r achines achines achine ny the product of the ractica ractica 73 Mec gand N ronics ences,	mains an s S C machin s machin s machine s machine twork quency c zo drives l course chatronic flanagen (1063 Ma 1065 Inc	d motor ines es hes converter s or magn cs, 1070 E hent), Elec echatroni	ngineerir strical Eng	ng Compu gineering and 1069	П
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9	Importance of the grade for the final grade:
	according to BRPO or SPO if ungraded elective subject
10	Module coordinator:
	Prof. DrIng. Andreas Bünte
11	Other information:
12	Language:
	German

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IUIIID	fication er:	Workload:	Credits:	Stud	y semes		Frequency offer	of the	Durati	on:
1308		150 h	5	5th (or7ths	em.	Annual (Winter)		1 sem	l.
	Course:	•	Planned group	sizes	Scop	e	Actual co time / cla teaching		Self-stu	dy
Ī	Lecture		60 students		2	weekly hours	30	h	45	h
Ī	Sem. les	sons	30 students		2	weekly hours	30	h	45	h
Ī	Exercise		20 students		0	weekly hours	0	h	0	h
Ī	Practica	l or seminar	15 students		0	weekly hours	0	h	0	h
Ī	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	drive tra basis o sound l possibi the indi	ain systems. T f characteristi knowledge of lities and limit	rencesin energ hey will be able c diagramsof t longitudinal ve sof electric mo and know the	e to sim he ener hicle dy bility wi	ulate di gy stor /namic: th rega	riving cy rage and s. The stu ard to the	cles of ele lenergy c udents are respecti	ectric vel converte e able to ve applic	nicles on rs on the evaluate cation pro	the basis o the ofile of
3			ehicle dynamic	s: Powe	rande	neravde	emand			
	 V E C R E M E C P P 	nergy conver lybrid drive sy priving cycles: ecording and nergy balanc lobile energy lectrical energy charging and pemand-orien rimary energy ossible contri	rain of alternat ter in the vehicl vstems Theoretical dri l evaluation of r ing using the ex storage syster	ive driv e powe iving cy eal driv xample ms in co aracter electric gy flows orked e	rive syste e syste rtrain cles / re ing cyc of a sel mparis istics vehicle nergy s	stems ms eal drivir cles lf-driver on s	a driving c	-	piles to th	e

	Formal:	
	Content:	General basic knowledge in the subject mechanics / dynamics is assumed
6	Forms of assess	nent:
Ŭ	Written examir	nation, combination examination, performance examination or oral examination
7	Prerequisite for t	he award of credit points:
	Module exami	nation pass and course assessment
8	Application of th	e module (in the following study programmes)
	Mechatronics	(B.Sc.)
9	Importance of th	e grade for the final grade:
	according to B	RPO
10	Module coordina	ator:
	Prof. DrIng. H	lerbertFunke
11	Other information	n:
12	Language:	
	German	

Elec	ctronics								EL		
lden num	tification ber:	Workload:	Credits:	Stud	y seme		Frequency offer	of the	Duratio	Duration:	
106	3	150 h	5 2nd :		sem.		Annual (Summer)		1 sem.		
1	Course:		Planned group sizes		Scop	De	Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h	
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h	
	alactra	nion in those f	-			nologist	-	-	•		
	and pro	oduction of ele	ields. Furtherm ectronic systen	ore, the	ey can d	classifye	-	-	•		
	Contents - Passi - Funds - Semi - Semi - Basic - Integr - Electr	oduction of ele se ve componer amentals of se conductor co ational amplif se of digital an rated Circuits ronics develo	ields.Furtherm ectronic systen	physics physics pricati cuits nics	ey can o assemb ar diodo ons	classify e blies.	ssentiala	spectso	f the deve	elopmer	
3	Contents - Passi - Funda - Semi - Opera - Basic - Integra - Electro Forms of Lecture	eduction of ele ve componer amentals of se conductor co ational amplif es of digital an rated Circuits ronics develo teaching: e, sem. lesson	ields. Furtherm ectronic system hts emiconductor p iers and their ap id analogue circ s/Microelectron pment and mar s with exercises	physics physics particula pplicati cuits nics nufactu	ey can o assemb ar diode ons Iring	classify e plies. esand tra	ssentiala	spectso	f the deve	elopmer	
4	Contents - Passi - Funds - Semi - Semi - Semi - Basic - Integr - Electr Forms of Lecture Participa Formal:	eduction of ele se ve componer amentals of se conductor co ational amplif es of digital an rated Circuits ronics develo teaching: e, sem. lesson tion requireme None	ields. Furtherm ectronic system hts emiconductor p pomponents, in p iers and their ap id analogue circ s/Microelectron pment and mar s with exercises hts: e	physics particula pplicati cuits nufactu	ey can o assemb ar diode ons iring ical co	classify e plies. esand tra	ssentiala	spectso	f the deve	elopmer	
4	And pro Contents - Passi - Funda - Semi - Opera - Basic - Integra - Electra Forms of Lecture Participa Formal: Content:	eduction of ele ve componer amentals of se conductor co ational amplif s of digital an rated Circuits ronics develo f teaching: e, sem. lesson tion requireme None Elecc f assessment:	ields. Furtherm ectronic system hts emiconductor p omponents, in p iers and their ap id analogue cird s/Microelectron pment and mar s with exercises hts: e trical Engineeri	physics particula pplicati cuits nufactu s, pract	ey can o assemb ar diode ons iring ical co	classify e plies. esand tra	ssentiala	spectso	f the deve	elopmer	
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4 5 6 7	and pro	eduction of ele ve componer amentals of se conductor co ational amplif es of digital an rated Circuits conics develo f teaching: e, sem. lesson tion requireme None Elecc f assessment: examination site for the awa examination on of the modu	ields. Furtherm ectronic system of analogue circo of Analogue circ	physics particula pplicati cuits nufactu s, pract ing1 (10 ation is: se asse ng study	ey can o assemb ar diode ons ical co 73) ssmen progra	es and tra	ansistors	and their	basic cire	elopmer	
4 5 7 8	and pro	ve componer amentals of se conductor co ational amplif es of digital amplif rated Circuits ronics develo teaching: e, sem. lesson tion requireme None Elecc assessment: examination site for the awa e examination on of the modu ince of the grade	ields. Furtherm ectronic system hts emiconductor p iers and their ap id analogue circo c/Microelectron pment and mar s with exercises hts: e trical Engineeri or oral examina and of credit point pass and cours	physics particula pplicati cuits nufactu s, pract ing1 (10 ation se asse ng study Engine	ey can o assemb ar diode ons ical co 73) ssmen progra	es and tra	ansistors	and their	basic cire	elopmer	
	and pro	eduction of ele ve componer amentals of se conductor co ational amplifies of digital amplifies conductor co ational amplifies of digital amplifies	ields. Furtherm ectronic system iers and their ap iers and their ap id analogue circo c/Microelectron pment and mar s with exercises nts: e trical Engineeri or oral examina and of credit point pass and cours ale (in the followin instrumentation e for the final grad	physics particula pplicati cuits nufactu s, pract ing1 (10 ation se asse ng study Engine	ey can o assemb ar diode ons ical co 73) ssmen progra	es and tra	ansistors	and their	basic cire	elopmer	
4 5 7 8 9	and pro	ve componer amentals of se conductor co ational amplif es of digital an rated Circuits conics develo teaching: <u>e</u> , sem. lesson tion requireme <u>None</u> <u>Elecc</u> assessment: <u>examination</u> site for the awa examination on of the modu nology and lince of the grade ing to BRPO coordinator: Ing. Andrea formation:	ields. Furtherm ectronic system iers and their ap iers and their ap id analogue circo c/Microelectron pment and mar s with exercises nts: e trical Engineeri or oral examina and of credit point pass and cours ale (in the followin instrumentation e for the final grad	physics physics particula pplicati cuits nufactu s, pract ing1 (10 ation ts: se asse ng study Engine de:	ey can o assemb ar diode ons iring ical co 73) ssmen progra ering (E	es and tra es and tra urse t mmes) 3.Sc.) and	ansistors	and their	basic cire	elopmer	

Elec	ctrical Eng	ineering1							ET1	
lden num	tification ber:	Workload:	Credits:	Stud	y semes		Frequency offer	y of the	Duratio	on:
107		150 h	5	1st s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group	sizes	Scope		Actual contact time / classroom teaching		Self-stud	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
	evaluate approp	e DC netwo riately. The s	relations and la rks. They can tudents will be	exami able to	ne giv identif	en setu _l y, desigr	ps and n and ass	dimensio	on simple	e circuit
3	evaluate appropri bounda Contents - Basic	e DC netwo riately. The s ary conditions : knowledge	rks. They can tudents will be s for application	exami able to ns typica	ne giv identif al of the	ren setu Ty, desigr e course	ps and n and ass of study.	dimensio sess basi	on simple	e circuit
3	evaluate appropri bounda Contents - Basic - Charg - Resist	e DC netwo riately. The s ary conditions : knowledge ge, current ar	rks. They can tudents will be	exami able to hs typica	ne giv identif al of the d, Coul	en setu y, desigr e course omb forc	ps and n and ass of study.	dimensio sess basi	on simple	e circuit
3	evaluate appropri bounda Contents - Basic - Charg - Resist - Energ - DC cir - Series	e DC netwo riately. The s ry conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel and	rks. They can tudents will be s for application nd voltage, elect sistance behavi ng arrow syster I bridge circuit,	exami able to ns typica ctric fiek iour, Oh ms, Kirc	ne giv identif al of the d, Coul m's lav	ven setui iy, desigr e course omb forc v heorems	ps and n and ass of study. ce, capac ; ideal an	dimensio sess basi sitances	on simple	e circuit
3	evaluate approprise bounda - Contents - Basic - Charg - Resist - Energ - DC cir - Series - Netwo - Magr	e DC netwo riately. The s ary conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel anc ork calculatio netic field, lav	rks. They can tudents will be s for application nd voltage, elect sistance behavi ng arrow syster I bridge circuit,	exami able to ns typica ctric fiek iour, Oh ms, Kirc voltage nductar	ne giv identif al of the d, Coul m's law shhoff t and cu	ven setu iy, desigr e course omb forc v heorems urrent div ce effect	ps and n and ass of study. ce, capac ; ideal an <i>v</i> ider t in the m	dimensio sess basi sitances d real sol	urces,	e circuit
	evaluate approprise bounda Contents - Basic - Charg - Charg - Resist - Energ - DC cir - Series - Netwo - Magr - Static Forms of	e DC netwo riately. The sing ry conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel and ork calculation retic field, law and dynamic teaching:	rks. They can tudents will be s for application nd voltage, elect sistance behavi ng arrow system I bridge circuit, in v of induction, ir c processes, sir	exami able to ns typica ctric fiek iour, Oh ms, Kirc voltage nductar	ne giv identif al of the d, Coul m's law shhoff t and cu	ven setu iy, desigr e course omb forc v heorems urrent div ce effect	ps and n and ass of study. ce, capac ; ideal an <i>v</i> ider t in the m	dimensio sess basi sitances d real sol	urces,	e circuit
4	evaluate approprise bounda Contents - Basic - Charg - Charg - Charg - Charg - Charg - Charg - Series - Netwo - Series - Netwo - Magr - Static Forms of Lecture Participat	e DC netwo riately. The s ry conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel and ork calculation ork calculation teaching: s, exercises, tion requirement	rks. They can tudents will be s for application nd voltage, elect sistance behavi ng arrow system I bridge circuit, n v of induction, ir c processes, sir practicals nts: e	exami able to ns typica ctric fiek iour, Oh ms, Kirc voltage nductar	ne giv identif al of the d, Coul m's law shhoff t and cu	ven setu iy, desigr e course omb forc v heorems urrent div ce effect	ps and n and ass of study. ce, capac ; ideal an <i>v</i> ider t in the m	dimensio sess basi sitances d real sol	urces,	e circuit
4	evaluate appropri- bounda Contents - Basic - Charg - Charg - Resist - Energ - DC cir - Series - Netwo - Magr - Static Forms of Lecture Participat Formal: Content: Forms of	e DC netwo riately. The sing conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel and ork calculation retic field, law and dynamic teaching: s, exercises, tion requireme Non- assessment:	rks. They can tudents will be s for application nd voltage, elect sistance behavi ng arrow system I bridge circuit, n v of induction, ir c processes, sir practicals nts: e	exami able to as typica ctric fiek iour, Oh ms, Kirc voltage nductar nusoida	ne giv identif al of the d, Coul m's law shhoff t and cu	ven setu y, desigr e course omb forc v heorems urrent div ce effect	ps and n and ass of study. ce, capac ; ideal an <i>v</i> ider t in the m	dimensio sess basi sitances d real sol	urces,	e circuit
4 5 6 7	evaluate approprise bounda Contents - Basic - Charg - Charg - Charg - Charg - Charg - Series - Netwo - Magr - Static Forms of Lecture Participat Formal: Content: Forms of Written Prerequise Module	e DC netwo riately. The s ary conditions knowledge ge, current ar ance and res y and power rcuits, counti s, parallel and ork calculation netic field, law and dynamic teaching: s, exercises, tion requireme Non- assessment: examination site for the awa examination	rks. They can tudents will be s for application and voltage, elect sistance behavi ng arrow system bridge circuit, on v of induction, ir c processes, sir practicals nts: e e or oral examina and of credit point pass and cours	exami able to as typica ctric fiek iour, Oh ms, Kirc voltage nductar nusoida ation s: se asse	ne giv identif al of the d, Coul m's law hhoff t and cu hce, for lexcita	ren setui iy, desigr e course omb forco w heorems urrent div ce effect ation, imp	ps and n and ass of study. ce, capac ; ideal an <i>v</i> ider t in the m	dimensio sess basi sitances d real sol	urces,	e circuit
4 5 7 8	evaluate approprise bounda Contents - Basic - Charg - Charg - Charg - Charg - Charg - Series - Netwo - Series - Netwo - Magr - Static Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatic	e DC networriately. The sign conditions in the second seco	rks. They can tudents will be s for application ad voltage, elect sistance behavi ng arrow system bridge circuit, n vof induction, ir c processes, sir practicals nts: e e or oral examina ard of credit point pass and cours ule (in the followin nstrumentation	exami able to as typica ctric fiek iour, Oh ms, Kirc voltage nductar nusoida ation s: se asse ig study Engine	ne giv identif al of the d, Coul m's lav shhoff ti and cu nce, for lexcita	en setu y, desigr e course omb force w heorems urrent div ce effect ation, imp	ps and in and ass of study. ce, capac ; ideal and vider t in the magedance	dimensionsess basis sitances d real sources agnetic f	urces,	e circuit
4 5 6 7	evaluate approprise bounda Contents - Basic - Charg - Charg - Charg - Charg - Charg - Series - Netwo - Magr - Static Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Biotech Importan accordi	e DC networriately. The sign conditions in the second seco	rks. They can tudents will be s for application ad voltage, elect sistance behavi ng arrow system bridge circuit, on vof induction, ir practicals nts: e or oral examination pass and cours ule (in the followin	exami able to as typica ctric fiek iour, Oh ms, Kirc voltage nductar nusoida ation s: se asse ig study Engine	ne giv identif al of the d, Coul m's lav shhoff ti and cu nce, for lexcita	en setu y, desigr e course omb force w heorems urrent div ce effect ation, imp	ps and in and ass of study. ce, capac ; ideal and vider t in the material edance	dimensionsess basis sitances d real sources agnetic f	urces,	e circuit

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

		ineering2							ET2				
Iden num	tification ber:	Workload:	Credits:	Stud	y seme		Frequenc offer	y of the	Duratio	n:			
107		150 h	5	5 3rd c			Annual (Winter)		1 sem.				
1	Course:		Planned group	sizes	Scope		Actual o time / c teaching	lassroom	Self-study				
	Lecture		60 students		2	weekly hours	30	h	45	h			
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h			
	Exercise		20 students		0	weekly hours	0	h	0	h			
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h			
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h			
3	apply the system current signification bounda Contents Basic fe Basic el System Dynami Comple Periodia Impeda Reactiv Three-p Frequer RLC cirro Transfe Pourier a	ne associated s. Students a areas of ap ance. Studer ary conditions eature: ectrical engi term, linearit ic systems, cl ex quantities c signals, sinu ance, admitta e power, app bhase curren ncy response cuits, resona r function, fre filters analysis	lassification: sta usoidal signals, e nce parent power, ac	hods fo be and a can cl to iden stypica atic, tran expone ctive pc	r desc calcula assify tify, de al of the sient, s ential os wer	ribing dy ate AC r and eva esign an e course stationan scillation	namic pr networks. aluate th d apply of study	ocesses By gaini e practic advance	in electrot ng an ins al and ec	echnical ight into conomic			
	Lecture		is with exercise:	s, pract	ical co	urse							
4	Participat	tion requireme											
4		Non	C		<u> </u>		tronics (1000 10					
	Formal: Content:			ing (107	<u>0 or 10</u>	ent: Electrical Engineering (1070 or 1073), Electronics (1063 or 1065) is of assessment:							
	Formal: Content: Forms of	Elec assessment:	trical Engineeri							- i 4 !			
5	Formal: Content: Forms of Written	Elec assessment: examination	trical Engineeri , combination e	xamina						nination			
5	Formal: Content: Forms of Written Prerequis	Elect assessment: examination site for the awa	trical Engineeri , combination e ard of credit point	xamina [:] :s:	tion, pe	erforman				nination			
5	Formal: Content: Forms of Written Prerequise Module	Elec assessment: examination site for the awa examination	trical Engineeri , combination e	xamina s: se asse	tion, pe ssmen	erforman t				ninatio			

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

Identification		ystems							ESYS		
num	ber:				y semes		Frequency offer	of the		Duration:	
1079		150 h	5	6th	sem.		Annual (Summer)		1 sem.		
1	Course:	•	Planned group	Planned group sizes		e	Actual co time / cla teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	l or seminar	15 students		1	weekly hours	15	h	22.5	h	
		ed self-study	60 students		0	weekly hours	0	h	0	h	
	FPGA	۹).	toolchains to b	bring th	ie synt	hesised		to a tar	get hard	vare (e	
3	FPGA - deve deve - evalu (hard - expla signa - distir progr - comp	A). lop a comple loped functio late algorithr ware/softward ain design co lls. aguish the par camming. pare their syn groups.	x logic compo nmodules. ns with regar	onent ac onent ac d to hardwa algorit	ie synt ccordir their i are-rel hms fc	hesised ng to spe mpleme ated pro or the hai	functions ecification ntability i cessing c rdware sy	to a tar ns basec n hardv of discre vnthesis	get hards I on the p ware or te and co from con	vare (e reviou softwa ontinuc ventio	

	1	
		hardware/software co-design
		nechatronic systems such as robots
4	Forms of teach	5
	Lecture, sem	lessons, practical course
5	Participation re	equirements:
	Formal:	None
	Content:	Basic knowledge in the fields of digital technology, programming and
		computer architectures
		Modules:
		1045 Digital Electronics II;
		1070 Digital ElectronicsI;
		1104 Computer Science 1
6	Forms of asses	
		nination, combination examination or oral examination
7	Prerequisite for	the award of credit points:
		nination pass and course assessment
8	Application of t	the module (in the following study programmes)
		gineering (B.Eng.), Engineering Computer Sciences (B.Eng.), Mechatronics (B.Sc.)
		l Engineering and Management (B.Sc.)
9		the grade for the final grade:
	according to	
10	Module coordin	
		at. Axel Schneider
11	Other information	
		be announced at the beginning of the course.
12	Language:	
	German	

		ng Proces								FER		
ldenti [.] numb	fication er:	Workload	d: Cre	dits:	Study	/ semes		Frequenc offer:	y of the	Durat	Duration: 1 sem.	
1090		150	5		4th se	emester		Annual		1 sem.		
								(Summer)		_		
1	Course:		Planned	Planned group sizes:		Scope:		Actual contact time/classroom teaching		Self-study		
Ī	Lecture		60 stuc	lents		2	weekly hours	30	h	45	h	
ſ	Sem. les	sons	30 stuc	lents		0	weekly hours	0	h	0	h	
Ī	Exercise	1	20 stuc	lents		2	weekly hours	25	h	35	h	
	Practical	or seminar	15 stud	ents		1	weekly hours	5	h	10	h	
	Supervis	ed self-stu	dy 60 stud	lents		0	weekly hours	0	h	0	h	
2	-		competence basic knowled		he proce	sses of	productic	n engine	ering. The	ey have pra	actical	
	-		ianual and ma basic calcula			-				-	-	
	-	-	t suitable ma									
	-	-	omic efficiend					-				
	-	ents for pro							5	-		
	They are	e familiar wi	th the tools of	CAD-C	CAM and	can ex	ecute a C	AD-CAN	l process	on their ov	vn.	
3	Contents	6:										
	Basics o	f production	n technology	accord	ling to DI	N 8580	with cons	sideration	of the ma	aterial grou	ups.	
		presentation	on of selected	manuf	acturing	proces	ses of the	process	groups fo	rming, forı	ming,	
	-		design rules	and bas	ic calcul	ations f	or selecte	d manufa	acturina p	rocesses.		
	General	description	s of manufac e example of	turing p	rocesses	6.						
4		f teaching:		u o uxi	o mining	machin	0.					
		•	nd practical c	ourse								
5		tion require										
F	Formal:		lone									
F	Content:	N	lone									
		N	lodules:									
		1	24 Construct	ion;								
6	Form of	assessmen	t:									
	Written e	examination	or course as	sessme	ent							
7	Prerequi	site for the	award of cree	dit point	S:							
	Module	examination	n pass and co	ourse as	sessmer	nt						
8	Applicati	on of the n	nodule (in the	followin	g study	prograr	nmes):					
		-	ng and Manag	-								
9		-	rade for the f	inal grad	de:							
		ig to BRPO										
10		coordinator										
		-Ing. Brigitta	a Gänsicke									
11		formation:										
	Literatur											
		'Bast/Dürr/ gstechnik	Matthes: Gru	ndlagen	der Fert	igungst	echnik Fr	itz/Schulz	ze:			
	. er agen i	gotoornint										

12	Language:
	German

	te Elemen	t Methods							FEM		
Iden num	tification ber:	Workload:	Credits:	Stud	y semes		Frequency offer	y of the	Duration:		
109	4	150 h	5	4th o	4th or 6th sem.			Annual (Summer)		1 sem.	
1	Course:		Planned group	sizes	Scop	e	Actual c time / cl teaching	assroom	Self-stud	dy	
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
		or seminar	15 students		1	weekly hours	15	h	22.5	h	
2		ed self-study outcomes/con	60 students		0	weekly hours	0	h	0	h	
3	compor	nents with FEI				-				analyse	
	Understand the finite element method for structural and temperature calculuild FEM models with load definition and boundary conditions, interpresentation components with FEM programs in terms of deformation, stress, temperature Contents: - Areas of application of the FEM - Structure of the finite element method - Geometry, nodes, elements - Shape functions, deformation approach - Element stiffness matrix, total stiffnessmatrix - Boundary conditions, forces - Principle of minimum potential energy - Bar, disc and solid elements										
	- Shape - Eleme - Bound - Princi - Bar, d - Isopa	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem	eformation app natrix, total stiffi ns, forces im potential ene elements nent formulatior	broach nessma ergy	atrix						
4	- Shape - Eleme - Bound - Princi - Bar, d - Isopal - Nume Forms of	e functions, d ent stiffness n dary condition ple of minimu isc and solid rametric elemetric elemetric elemetric erical integrati teaching:	eformation app natrix, total stiff ns, forces im potential end elements nent formulation ion	proach nessma ergy n	atrix						
4	 Shape Eleme Bound Princi Bar, d Isopati Nume Forms of Lecture Participati Formal: 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem erical integrat teaching: s, exercises a tion requireme None	eformation app natrix, total stiffi ns, forces im potential energiements nent formulation ion and practical conts:	proach nessma ergy n purse		itegralca	alculus				
	 Shape Eleme Bound Princi Bar, d Isopat Isopat Nume Forms of Lecture Participat Formal: Content: Forms of 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem erical integrat teaching: s, exercises a tion requirement None assessment:	eformation app natrix, total stiff ns, forces im potential ene elements nent formulation ion and practical conts:	proach nessma ergy n <u>purse</u>	landir			on perfo	mance		
5	 Shape Eleme Bound Princi Bar, d Isopal Nume Forms of Lecture Participal Formal: Content: Forms of Written Prerequis Module 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem erical integrat teaching: es, exercises a tion requireme None assessment: or oral exami site for the awa examination	eformation app natrix, total stiffins, forces impotential energies elements nent formulation and practical conts and practical conts puter skills, diffind ration; in each rd of credit point pass with preli	proach nessma ergy n burse ferentia case w s: minary e	land ir ith prel examin	iminary e ation		on perfo	mance		
5	 Shape Eleme Bound Princi Bar, d Isopati Nume Forms of Lecture Participati Formal: Content: Forms of Written Prerequist Module Application Enginee 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem erical integrat teaching: s, exercises a tion requirement or oral exami- site for the awa examination on of the modu ering Comput	eformation app natrix, total stiffinns, forces impotential energian elements nent formulation ion and practical cont nts: puter skills, diffind ration; in each rd of credit point pass with prelin ile (in the followin cer Sciences (B.	oroach nessma ergy n ourse ferentia case w s: minary e og study .Eng.) al	land ir ith prel examin prograr	iminary e nation mmes)	examinati	on perfo	rmance		
5 6 7	 Shape Eleme Bound Princi Bar, d Isopat Isopat Nume Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Application Enginee Important accordi 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric element rical integrat teaching: s, exercises a ton requirement site for the awa examination on of the modu ering Comput ice of the grade ng to BRPO	eformation app natrix, total stiffins, forces impotential energination elements nent formulation and practical cont nts: e puter skills, diffind ration; in each rd of credit point pass with prelin ile (in the followin	oroach nessma ergy n ourse ferentia case w s: minary e og study .Eng.) al	land ir ith prel examin prograr	iminary e nation mmes)	examinati	on perfo	rmance		
5 6 7 8	 Shape Eleme Bound Princi Bar, d Isopal Isopal Nume Forms of Lecture Participal Formal: Content: Forms of Written Prerequist Module Application Enginee Important accordi Module of 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric element rical integration teaching: s, exercises a tion requirement s, exercises a tion requirement on oral exami- site for the awa examination on of the modu- ering Comput-	eformation app natrix, total stiffins, forces impotential energies elements nent formulation and practical contents puter skills, diffind ration; in each ration; in each rati	oroach nessma ergy n ourse ferentia case w s: minary e og study .Eng.) al	land ir ith prel examin prograr	iminary e nation mmes)	examinati	on perfo	rmance		
5 6 7 8 9	 Shape Eleme Bound Princi Bar, d Isopal Isopal Nume Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Application Enginee Important accordit Module of Prof. Dr. Other inf 	e functions, d ent stiffness n dary conditio ple of minimu isc and solid rametric elem erical integrati teaching: s, exercises a tion requireme stion requireme or oral exami site for the awa examination on of the modu ering Comput ice of the grade ng to BRPO coordinator: Ing. Rolf Na ormation: re will be ann	eformation app natrix, total stiffins, forces impotential energies elements nent formulation and practical contents puter skills, diffind ration; in each ration; in each rati	oroach nessma ergy n ourse ferentia case w s: minary e ng study .Eng.) ai de:	land ir ith prel examin prograr nd Mec	iminary e ation mmes) chatronic	examinati	onperfo	rmance		

	ider and D	viversity:Suc	cess Factors fo	r Comp	anies				GUD		
den num	tification ber:	Workload:	Credits:	Stud	y seme		Frequence offer	cy of the	Duratio	on:	
3135		150 h	5	5th s	sem.		Annual (Winter)		1 sem	1 sem.	
1	Course:		Planned group	Planned group sizes)e	Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. less	sons	30 students		2	weekly hours	30	h	45	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h	
	Supervise	ed self-study	60 students		0	weekly	0	h	0	h	
	 are sensitised to human heterogeneity in the corporate context. independently recognise stereotyping and can develop ideas for possible changes in the business environment. are able to independently collect relevant information on established concepts such as gender mainstreaming and diversity management and to assess their relevance for professional practice. are familiar with selected theories and approaches in the current discourse on diversity management and, building on this, are able to develop conceptual ideas for the implementation of holistic diversity management in a corporate context. 										
3	Contents	 Defiapp mai Leg Ger Sub dive Pos into hum Cor Cas bus 	initions and del proaches to equ nstreaming) al bases and po- neral Equal Trea jective and soc ersity sible approach account in sele nan resources) neept for the sus se studies and a iness practice	al oppo olitical in atment A cial valu es for ta ected ar stainab	ortunitie nfluenc Act (Ge es, atti aking d reas of le intro	es (e.g. d ces (e.g. E erman ab tudes and liversity c business duction d	iversity i EU Anti- breviati d prejuc characte s (marke of holist	managem Discrimin on: AGG)) dices in the eristics (e.g eting, prod	ent, genc ation Dire e context g. gender luct devel	ctive). of and age opment	
		teaching:									
4	Lecture	, sem. lesson	essons, presentation, group work, presentation of seminar paper								
1 5		, sem. lesson		,group	work, p	presentat	ion of se	eminarpa	per		
				,group	work, p	presentat	ION OT SE	eminarpa	per		

6	Forms of assessment:
	Term paper, written examination 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.), Biotechnology and Instrumentation Engineering (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 coordinator:
	Prof. DrIng. Andrea Kaimann
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Higl	n-Frequei								HFE	
	tification	Workload:	Credits:	Stud	y semes		Frequency	of the	Duratio	n:
num 1101		150 h	5 5t		th sem.		offer Annual (Winter)		1 sem.	
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours		h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	evalu	ate the meas	urement results of "wave mate	produ	ced,		ermining frequenc	·		
3	evalu. - expla neces - expla applie - Evalue - Four- - Leade - Shaft - Stanc - The S	ate the meas in the state ssary system in compone cation s pole theory for ership theory adjustment lardised power mith Chart	urement results of "wave matc boundary conc nts of high-fre or the description	produc hing" o litions, equenc	ced, of linea cy elec ear circ	ar high-f tronics cuits	frequenc	y systen	ns and de	esign tl
	evalu. - expla neces - expla applie Contents - Four- - Leade - Shaft - Stand - The S - Comp - Labor Forms of	ate the meas in the state ssary system in compone cation s pole theory for ership theory adjustment lardised pow mith Chart ponents of hig ratory practic	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e cals in small grou	produc ching" o litions, equenc on of lin ering p lectron ups	ced, of linea cy elec earciro aramet ics	ar high-f tronics cuits cers	frequence and sele	y systen	ns and de	esign tl
4	evalua - explaineces - explaine applie Contents - Four- - Leade - Shaft - Stand - The S - Comp - Labor Forms of Lecture	ate the meas in the state ssary system in compone cation s: pole theory for ership theory adjustment lardised pow mith Chart conents of hig ratory practic	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e als in small grou	produc ching" o litions, equenc on of lin ering p lectron ups	ced, of linea cy elec earciro aramet ics	ar high-f tronics cuits cers	frequence and sele	y systen	ns and de	esign tl
3 4 5	evalua - explaineces - explaine applie Contents - Four- - Leade - Shaft - Stand - The S - Comp - Labor Forms of Lecture	ate the meas in the state ssary system in compone cation pole theory for ership theory adjustment lardised pow- mith Chart ponents of high ratory practice teaching: a, sem. lesson tion requirement None Math	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e cals in small grout s, laboratory pra- nts: e mematics 1 (1146	produc ching" of litions, equence on of lin ering p lectron ups acticals	ced, of linea cy elec ear circ aramet ics sin sma	ar high-f tronics cuits cers all groups 2 (1152 or	frequence and sele s. r 1153).	y systen	ns and de	esign tl
4	evalue - explained - explaine	ate the meas in the state ssary system in compone cation pole theory for ership theory adjustment lardised pow mith Chart ponents of high ratory practic teaching: p, sem. lesson tion requireme None Teasessment:	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e sals in small grout s, laboratory pra- nts: e nematics 1 (1146 trical Engineeri	produc ching" of litions, equence on of lin ering p lectron ups acticals or 1147, ng 1 (10	ear circ aramet ics ain sma 7) and 2 71 or 10	ar high-f tronics cuits cers all groups 2 (1152 or 072) and	s. 2 (1075)	y system	ns and de	esign tl
4	evalua - explaineces - explaine applie Contents - Four- - Leade - Shaft - Stand - The S - Comp - Labor Forms of Lecture Participa Formal: Content:	ate the meas in the state ssary system in compone cation s: pole theory for ership theory adjustment lardised power mith Chart ponents of high ratory practice teaching: a, sem. lesson tion requirement None Math Elect or oral examinisite for the away	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e vals in small group s, laboratory pra- nts: enematics 1 (1146 trical Engineeri nation; in each or d of credit points	productions, ching" of litions, equence on of lin ering p lectron ups acticals or 1147 ng 1 (10 case w s:	ced, of linea cy elec ear circ aramet ics sin sma 7) and 2 71 or 10 ith prel	ar high-f tronics cuits eers all groups 2 (1152 of 072) and iminary e	s. 2 (1075)	y system	ns and de	esign tl
4	evalue - explaineces - explaineces - explaine applie - contents - Four- - Leade - Shaft - Stand - The S - Comp - Labor Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module	ate the meas in the state ssary system in compone cation pole theory for ership theory adjustment lardised powe mith Chart ponents of high ratory practice teaching: a, sem. lesson tion requireme None Second Election assessment: or oral exami- site for the awa a examination on of the mode	urement results of "wave matc boundary conc nts of high-fre or the description er waves / scatt gh-frequency e cals in small grout s, laboratory pra- nts: enematics 1 (1146 trical Engineeri nation; in each	productions, ching" of litions, equence on of lin ering p lectron ups acticals or 1147 ng 1 (10 case w s: minary e g study	ced, of linea cy elec ear circ aramet ics sin sma 7) and 2 71 or 10 ith prel examin program	ar high-f tronics cuits	s. r 1153). 2 (1075) examination	y system	ns and de	esign tl speci

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

Inal	ustrial Eng	gineering/Lea	n Management	t					INLM	
	tification	Workload:	Credits:	Study	/ semes		Frequency of the offer		Duratio	n:
num 1102		150 h	5 6		n sem.		Annual (Summer)		1 sem.	
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise	9	20 students		0	weekly hours	0	h	0	h
	Practica	l or seminar	15 students		1	weekly hours	15	h	22.5	h
		ed self-study g outcomes/con	60 students		0	weekly hours	0	h	0	h
	-	Lean Manag meaningful Are able to id Understand operational a for simple pr Are able to account ergo	They also reco gement and un vay. dentify waste in typical lean m applications. The actical cases. describe, plan pnomic, technic nd target datao	derstai the cor ethods ey can and im cal and im	nd tha mpany s and t also ap nprove work or	t the top tools an oplythea work sy rganisati	oics com d unders acquiredr stems in on aspec	stand ho nethodo the con ts, aswel	t each oth w they re logical kno npany, tak l asdeterr	elate t owledg king int
3	Lean P	duction, defini roduction	tion and delimit	ation of	Indust	trialEngi	næring, L	ean Ma	nagmenet	and
	3. Value 4. Stand 5. Flow 6. Leve 7. Total 8. Qual 9. Value 10. Lea 11. Syst 12. Sele 13. Sele	e, value creati dards, Kaizen , takt, pull Iled production productive m lity, problem s e stream analy n administrati ematics for the ected method ected rules, m	on, fast set-up aintenance, sho olving ysis and design on and lean dev e planning and s for data acqui ethods and tool	opfloor velopme design sition a	ent of worl nd dat	k and pro a evalua	tion	systems		
4	3. Value 4. Stand 5. Flow 6. Leve 7. Total 8. Qual 9. Value 10. Lea 11. Syst 12. Sele 13. Sele 14. Con Forms o	e, value creati dards, Kaizen , takt, pull lled production productive m lity, problem s e stream analy n administration ematics for the ected method ected rules, m npensation ar f teaching:	on and waste on, fast set-up laintenance, sho olving ysis and design on and lean dev le planning and s for data acqui ethods and tool nd motivation	opfloor velopme design sition a s for wo	ent of worl nd dat orking s	k and pro a evalua system c	tion lesign			
4	3. Value 4. Stand 5. Flow 6. Leve 7. Total 8. Qual 9. Value 10. Lea 11. Syst 12. Sele 13. Sele 14. Con Forms o Lecture	e, value creati dards, Kaizen , takt, pull lled production productive m lity, problem s e stream analy n administration ematics for the ected method ected rules, m npensation ar f teaching:	on and waste on, fast set-up laintenance, sho olving ysis and design on and lean dev le planning and s for data acqui ethods and tool nd motivation	opfloor velopme design sition a s for wo	ent of worl nd dat orking s	k and pro a evalua system c	tion lesign			
	3. Value 4. Stand 5. Flow 6. Leve 7. Total 8. Qual 9. Value 10. Lea 11. Syst 12. Sele 13. Sele 14. Con Forms o Lecture	e, value creati dards, Kaizen , takt, pull lled production productive m lity, problem s e stream analy n administrati ematics for the ected method ected rules, m npensation ar f teaching: e, sem. lesson	on and waste on, fast set-up laintenance, sho olving ysis and design on and lean dev e planning and s for data acqui ethods and tool nd motivation s with exercises nts:	opfloor velopme design sition a s for wo	ent of worl nd dat orking s	k and pro a evalua system c	tion lesign			

6	Written exam, combination examination or oral examination
7	Prerequisite for the award of credit points:
	Module examination pass and course assessment
8	Application of the module (in the following study programmes)
	Mechatronics (B.Sc.) and Industrial Engineering and Management (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Magnus Horstmann
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

		Workload:	agement 1 – In Credits:		y seme		Frequenc	v of the	IGM Duratio	on:
numl 1275	oer:				sem.		offer Annual (Winter)		1 sem.	
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		3	weekly hours	45	h	67.5	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		l or seminar	15 students		0	weekly hours	0	h	0	h
2		ed self-study	60 students		0	weekly hours	0	h	0	h
	•	•	ontents of indundamentals ac	-		-				-
0	•	marketing fur apply the spe examples an the results. critically refle recapitulate self-study.ld study.		quired i nd tasks and ind ial featu	n other of ind epend ires an depenc	courses ustrial go ently solv d tasks o dently and	and to ic ods marl /e the as f industr d deepe	dentify di keting to s sociated ial goods n their kr	fferences selected p tasks and marketing	practica present g. through
3	•	marketing fur apply the spe examples an the results. critically refle recapitulate t self-study.ld study. sudy.	ndamentals ac ecial features a d case studies ect on the spec the course cor	quired in nd tasks and ind ital feature tent ind n learnin ng, espe and sele emblies r the rea	n other of ind epend ures an depend g grou cially c cted p , (c) sin	courses ustrial go ently solv d tasks o dently and ps which haracter problems gle units	and to ic ods marl ve the as f industr d deepe lastthro isation of : The bra ,(d) plan	dentify di keting to s sociated al goods n their kr ughout th industria inding of ts, (e) sys	fferences selected p tasks and marketing nowledge ne entire p al goods n f (a) raw a tems	present g. through period of narketing
3	• • • • • • • • • • • • • • • • • • •	marketing fur apply the spe examples an the results. critically refle recapitulate t self-study.ld study. sudy. sudy. sudy. sc Type-specif materials, (b) Cross-type a the business	ndamentals ac ecial features a d case studies ect on the spec the course cor eally, they form cks of marketing ic marketing a parts and asse approaches fo	quired in nd tasks and ind ital feature tent ind n learnin ng, espe and sele emblies r the rea	n other of ind epend ures an depend g grou cially c cted p , (c) sin ilisatio	courses ustrial go ently solv d tasks o dently and ps which haracter problems gle units n of susta	and to ic ods marl ve the as f industr d deepe lastthro isation of : The bra ,(d) plan ainable c	dentify di keting to s sociated al goods n their kr ughout th industria inding of ts, (e) sys	fferences selected p tasks and marketing nowledge ne entire p al goods n f (a) raw a tems	oractical present g. through period of narketing
4	Contents 1. 2. 3. Forms of Lecture Participa Formal: Content:	marketing fur apply the spe examples an the results. critically refle recapitulate t self-study.ld study. sudy. sudy. sudy. sudy. sudy. fieaching: e, sem.lessons tion requirement None Know	ndamentals ac ecial features a d case studies ect on the spec the course cor eally, they form cks of marketing a parts and asse approaches fo -to-business f	quired in nd tasks and ind ial featu- ntent ind n learnin ng, espe and sele emblies r the rea ield	n other of ind epend depend g grou cially c cted p ,(c) sin lisatio	courses ustrial go ently solv d tasks o dently and ps which haracter gle units n of susta	and to ic ods marl ve the as f industr d deepe lastthro isation of : The bra ,(d) plan ainable c	dentify di keting to s sociated al goods n their kr ughout th industria inding of ts, (e) sys	fferences selected p tasks and marketing nowledge ne entire p al goods n f (a) raw a tems	present g. through period of narketing
_	Contents 1. 2. 3. Forms of Lecture Participa Formal: Content: Forms of Written Prerequi	marketing fur apply the spe examples an the results. critically refle recapitulate t self-study.ld study. sudy. sudy. sudy. sudy. sudy. sudy. f teaching: e, sem. lessons tion requirement None f assessment: examination	ndamentals ac ecial features a d case studies ect on the spec the course cor eally, they form cks of marketin ic marketing a parts and asso approaches fo -to-business f s with exercise nts: exercise nts: exercise nts: exercise	quired in nd tasks and ind ial featu- ntent ind n learnin ng, espe emblies r the rea ield s, case	n other of ind epend depend g grou cially c cted p ,(c) sin lisatio	courses ustrial go ently solv d tasks o dently and ps which haracter gle units n of susta	and to ic ods marl ve the as f industr d deepe lastthro isation of : The bra ,(d) plan ainable c	dentify di keting to s sociated al goods n their kr ughout th industria inding of ts, (e) sys	fferences selected p tasks and marketing nowledge ne entire p al goods n f (a) raw a tems	present g. through period of narketing

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

	mputer Sc	cience 1 – Imp	erative Program	mming					IN1			
Identification number:						Stud	tudy semester: Frequence offer			y of the	Duration:	
110		150 h	5	1st s	em.		Annual (Winter)		1 sem.			
1	Course:		Planned group sizes		Scop	e	Actual contact time / classroom teaching		Self-study			
	Lecture		60 students		2	weekly hours	30	h	45	h		
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h		
	Exercise)	20 students		0	weekly hours	0	h	0	h		
	Practical	l or seminar	15 students		1	weekly hours	15	h	22.5	h		
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h		
3	- Foi Tui - Alg - The - Bai - Exj	ng content: rmal foundati ring machine gorithmsand e programmi	ons of compute decidability, vo representation ng language C a s, composite da instruction	on Neun of algor and its s	nanna rithms standa	rchitectu rd librarie	ire) es	algebra, p		nal logio		
				eprogra	ammin	g (blocks	, loops, c	onditiona	al stateme	nt)		
		ontrol structur	es of imperative es and recursic		ammin	g (blocks	,loops,c	onditiona	al stateme	nt)		
4	- Eff Forms o	ntrol structur nctions, scop iciency of alg f teaching:	es of imperative es and recursic	ons			, loops, c	onditiona	al stateme	nt)		
	- Eff Forms o Lecture Participa Formal:	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non	es of imperative es and recursic orithms <u>s with exercise</u> nts: ə	ons			, loops, c	onditiona	Il stateme	nt)		
5	- Eff Forms o Lecture Participa Formal: Content: Forms o	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non f assessment:	es of imperative es and recursic orithms <u>s with exercise</u> nts: e e	ons s, pract	ical co	urse						
5	- Eff Forms of Lecture Participa Formal: Content: Forms of Written Prerequi	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non f assessment: examination site for the awa	es of imperative es and recursic orithms s with exercise nts: e e combination e ard of credit point	s, practi xamina	ical col	urse						
5 6 7	- Eff Forms o Lecture Participa Formal: Content: Forms o Written Prerequi Module Applicati	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non f assessment: examination site for the awa e examination on of the mode	es of imperative es and recursic orithms s with exercise nts: e e combination e	s, practi xamina s: se asse ng study	tion, pe	urse erformand t mmes)	ceexam	ination or	oralexan			
4 5 7 8 9	- Eff Forms o Lecture Participa Formal: Content: Forms o Written Prerequi Module Applicati Biotech	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non f assessment: e examination site for the awa e examination on of the modu	es of imperative es and recursic orithms <u>s with exercise</u> nts: <u>e</u> combination e ard of credit point pass and cours ule (in the followin	xamina s: se asse g study Engine	tion, pe	urse erformand t mmes)	ceexam	ination or	oralexan			
5 6 7 8	- Eff Forms of Lecture Participa Formal: Content: Forms of Written Prerequi Module Applicati Biotech Importar accord	ntrol structur nctions, scop iciency of alg f teaching: e, sem. lesson tion requireme Non f assessment: examination site for the awa examination on of the mode nnology and I nce of the grad	es of imperative es and recursic orithms s with exercise nts: e combination e ard of credit point pass and cours ule (in the followin nstrumentation e for the final gra	xamina s: se asse g study Engine	tion, pe	urse erformand t mmes)	ceexam	ination or	oralexan			

12	Language:
	German

Cor	nputer Sc	ience2–Ob	ject-Oriented I	Progran	nming				IN2					
			dentification Workload				Credits:	Stud			Frequency	/ of the	Duratio	on:
num 111C		1501		and	sem.		offer		1.000					
ПU		150 h	5	Znu	sem.		Annual		1 sem	•				
							(Summe)						
1	Course:		Planned group sizes		Scope		Actual contact		Self-study					
	Course:						time / classroom							
						1	teaching		45					
	Lecture		60 students		2	weekly	30	h	45	h				
	Care las				_	hours	45	h-	00.5					
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h				
	Exercise		20 students		0	weekly	0	h	0	h				
	LYELCISE		20 students		Ŭ	hours	U		Ũ					
	Practical	or seminar	15 students		1	weekly	15	h	22.5	h				
					1	hours	10		22.0					
	Supervis	ed self-study	60 students		0	weekly	0	h	0	h				
		-				hours								
2	Learning	outcomes/con	npetences:											
	The stu	dents are able	e to analyse, ab	ostract a	Indmo	deltasks	in the fie	d of digit	al data pr	ocessir				
	and to	implement a	nd test them p	rogram	matica	lly. Indep	pendent o	of a spec	cific prog	rammir				
	languag	ge, they are a	able to apply th	he cond	epts o	f object	-oriented	l prograi	mming in	softwa				
	development. The students are able to efficiently implement small software projects using the													
	object-oriented programming paradigm with the programming language C++. They can apply													
	-			-	ith the p	programi	minglang	guage C-	++.They c					
	standar	rd algorithms	and data struct	uresto	ith the p concre	orogrami te proble	ming lang ems in SV	guage C-	++.They c					
	standar	rd algorithms		uresto	ith the p concre	orogrami te proble	ming lang ems in SV	guage C-	++.They c					
3	standar	rd algorithms ss the progra	and data struct	uresto	ith the p concre	orogrami te proble	ming lang ems in SV	guage C-	++.They c					
3	standar to asses Contents	rd algorithms ss the progra	and data struct	uresto	ith the p concre	orogrami te proble	ming lang ems in SV	guage C-	++.They c					
3	standar to asses Contents Teachir	rd algorithms ss the progra s: ng content:	and data struct mmes develop	uresto	ith the p concre	orogrami te proble	ming lang ems in SV	guage C-	++.They c					
3	standar to asses Contents Teachir - Ab	rd algorithms ss the progra s: ng content: stract data ty	and data struct mmes develop pe	ed in te	ith the p concre rms of t	brogrami te proble heir effic	ming lang ems in SV ciency.	guage C- / develop	++. They comment and					
3	standar to asses Contents Teachir - Ab - Co	rd algorithms ss the progra s: ng content: stract data ty ncepts of obj	and data struct mmes develop pe ect-oriented p	ed in te	ith the p concre rms of t	brogrami te proble heir effic	ming lang ems in SV ciency.	guage C- / develop	++. They comment and					
3	standar to asses Contents Teachir - Ab - Co pol	rd algorithms ss the progra ng content: stract data ty ncepts of obj ymorphism, i	and data struct mmes develop pe ect-oriented p nheritance)	ed in te	ith the p concre rms of t	brogrami te proble heir effic	ming lang ems in SV ciency.	guage C- / develop	++. They comment and					
3	standar to asses Contents Teachir - Ab - Co pol - Mo	rd algorithms ss the progra ng content: stract data ty ncepts of obj ymorphism, i idelling langu	and data struct mmes develop pe ect-oriented p nheritance) iage UML	rogram	th the p concre rms of t ming (a	brogrami te proble heir effic	ming lang ems in SV ciency.	guage C- / develop	++. They comment and					
3	standar to asses Contents Teachir - Ab - Co pol - Mo - Uni	rd algorithms ss the progra mg content: stract data ty ncepts of obj ymorphism, i delling langu it tests and te	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d	rogram	ming (a	brogrami te proble heir effic	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
3	standar to asses Contents Teachir - Ab - Co pol - Mo - Uni	rd algorithms ss the progra mg content: stract data ty ncepts of obj ymorphism, i delling langu it tests and te	and data struct mmes develop pe ect-oriented p nheritance) iage UML	rogram	ming (a	brogrami te proble heir effic	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
3	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg	rd algorithms ss the progra ing content: stract data ty ncepts of obj ymorphism, i idelling langu it tests and te ef introductio gorithms and o	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d	rogram levelop	ming (a	brogrami te proble heir effic	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg	rd algorithms ss the progra ing content: stract data ty ncepts of obj ymorphism, in delling langu it tests and te ef introductio gorithms and of teaching:	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d n to SW engine data structures	rogram levelop	ming (a ment dioms,	brogrami te proble heir effic bstractio	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
4	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg Forms of Lecture	rd algorithms ss the progra ss the progra stract data ty ncepts of obj ymorphism, in delling langu it tests and te ef introductio gorithms and of teaching: a, sem. lesson	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d n to SW engine data structures	rogram levelop	ming (a ment dioms,	brogrami te proble heir effic bstractio	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
4	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg Forms of Lecture Participa	rd algorithms ss the progra as	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d n to SW engine data structures s with exercise nts:	rogram levelop	ming (a ment dioms,	brogrami te proble heir effic bstractio	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg Forms of Lecture Formal:	rd algorithms ss the progra ss the progra is stract data ty ncepts of obj ymorphism, in delling langu it tests and te ef introductio gorithms and of teaching: a, sem. lesson tion requireme None	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d n to SW engine data structures s with exercise nts: e	rogram levelop s, pract	ming (a ment dioms,	brogrami te proble heir effic bstractio	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
4	standar to asses Teachir - Ab - Co pol - Mo - Uni - Brie - Alg Forms of Lecture Participa Formal: Content:	rd algorithms ss the progra ss the progra ng content: stract data ty ncepts of obj ymorphism, in delling langu it tests and te ef introductio gorithms and of teaching: a, sem. lesson tion requireme None Corr	and data struct mmes develop ect-oriented p nheritance) lage UML st-driven SW d n to SW engine data structures s with exercise nts:	rogram levelop s, pract	ming (a ment dioms,	brogrami te proble heir effic bstractio	ming lang ems in SW ciency. on, data e	guage C- / develop	++. They coment and					
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12	Language:
	German

	tification	Worklo	oad:	Credits:	Study	/ semes		Frequenc	y of the	Duratic	n:
num 1316		150 h		5	3rd s	sem.		offer Annual (Winter)		1 sem.	
1	Course:	<u> </u>		Planned group	sizes	Scop	e	Actual o time / cl teaching	assroom	Self-stuc	dy
	Lecture			60 students		2	weekly hours	30	h	45	h
	Sem. les	sons		30 students		1	weekly hours	15	h	22.5	h
	Exercise			20 students		0	weekly hours	0	h	0	h
	Practical	or semir	nar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-s	study	60 students		0	weekly hours	0	h	0	h
3	sensor- The stu Contents Teachir - Co	motors dents a s: ng conte ncepts	eystem reable ent: and fra	work out and is. eto design, bui ameworks for t ms: Basics, arc	ld and p	program	mme sim of hardv	ple sense vare and	or-motor software	units.	
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12	Language:
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	tification	Workload:		Credits:	Stud	y seme	ster:	Frequency	of the	Durati	on:
num								offer		1 sem.	
1113		150 h		5	5th	sem.		Annual			
								(Winter)			
1	Course:		Pla	anned group	sizes	Scop	e	Actual co		Self-stu	ıdy
								time / classroom teaching			
	Lecture		60	60 students		2	weekly	teaching 30	h	45	h
			00	60 students		-	hours	00	11	10	
	Sem. lessons		30) students		2	weekly	30	h	45	h
							hours				
	Exercise		20) students		0	weekly	0	h	0	h
	Practical	or seminar	15	students		0	hours weekly	0	h	0	h
	riactical	OF SETTINAL	10	Sludenis		0	hours	0	11	0	11
	Supervis	ed self-stud	y 60) students		0	weekly	0	h	0	h
							hours	-			
2	_	outcomes/c									
	The stu	dents are a	bleto	describec	lifferent	innova	ation and	lchangep	orocesse	es in the c	compar
	They ca	an indeper	dently	and action	n-orient	ed app	oly suitab	ole metho	ds for pl	anning, o	rganisii
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4	Problem and char Contents - Innov - Innov - Innov - Innov - Produ - Chan - Metho - Coop - The m Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi Module o	n solving. T ange enviro ation and in ation proce ation proce ge manage odical man eration in in arket as a feaching: b, sem. less tion requirer ktion requi	he cou onmen onmen ess the ess the ess the ement, agement, agement, agement, agement, agement, agement, ons ments: one one one c.) and on pas odule (i c.) and ode for D	urse enable ti in which a tion manage e early phase and intelled boundary ent of innov tion and ch of innovation of innovation on exam, p f credit point as and cour n the followir d Industrial the final gra	erformatis: se asse g study Engine	ergence ess col poperty rons and change change ance ex ssmen program	to act independent of act independent of act independent of a constraint of a	ect work o	essment or oral ex)	-

12	Language:
	German

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lden [:] num	tification	Workload:	Credits:	Stud	y semes		Frequenc offer	y of the	Durati	on:
num 1232		150 h	5	4th	or 6th s		Annual		1 sem	`
1204	<u> </u>	13011	5				(Summe	(r)	1 2611	1.
							(Summe	:r <i>)</i>		
1	Course:		Planned group	sizes	Scop	e	Actual of	contact	Self-study	
					· ·		time / classroom			
						1	teaching	1	15	
	Lecture		60 students		2	weekly	30	h	45	h
	Care las		20 atualanta		0	hours	00	h	45	la la
	Sem. les	sons	30 students		2	weekly hours	30	h	45	h
	Exercise		20 students		0	weekly	0	h	0	h
	EXECUSE		20 students		0	hours	U	ri	U	T1
	Practical	or seminar	15 students		0	weekly	0	h	0	h
	Tractical				0	hours	0		0	
	Supervis	ed self-study	60 students		0	weekly	0	h	0	h
					Ŭ	hours	Ŭ		Ŭ	
2	Learning	outcomes/con	npetences:							
3	Contents Methoc Plannin	s: lical developi g, tasks, spec	ment of produc	ts (base	ed on V		, 2221, 22	222, amor	-	
3	Contents Methoc Plannin sub-fur Idea ge evaluat	s: lical developing, tasks, spect actions, functions, function eneration/creation/creation ion of alternation	ment of produc	ts (base irement -> Ove	ed on V s list, d rview c on proc	DI 2206, evelopm of methoo cedures.	, 2221, 22 ientstruc ds, discu	222, amor cturing -> rsive and	Överall f	unction method
3	Contents Method Plannin sub-fur Idea ge evaluat Selecte with stree	s: lical developing, tasks, spect actions, function eneration/creation of alternation ad development esses)	ment of produc ifications/requi ional structure, ativity process tive solutions, e ent guidelines (e	ts (base irement -> Ove valuatio e.g.cost	ed on V s list, d rview c on proc	DI 2206, evelopm of methoo cedures.	, 2221, 22 ientstruc ds, discu	222, amor cturing -> rsive and	Överall f	unction method
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4 5 7	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stree Participa Formal: Content: Forms of Written Prerequis Module	ical developing, tasks, specinctions, functions, function of alternation/creation of alternation of alternation developments of teaching: teaching: set teaching: set to requirements None fassessment: examination, site for the award examination	ment of produc ifications/requi ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rd of credit point pass	ets (base irement -> Ove evaluatio e.g.cost ercises xamina s:	ed on V s list, d rview c on proc t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de	, 2221, 22 ient struc ds, discu velopme	222, amor cturing -> rsive and	Överall f	unction method
4 5 7	Contents Method Plannin sub-fur Idea ge evaluat Selecte with stree Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio	ical developing, tasks, spector actions, function eneration/creation of alternation ad development esses) teaching: b, sem. lesson tion requirement None assessment: examination, site for the awa examination on of the modu	ment of productifications/requi ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rrd of credit point pass le (in the followin	ets (base irement -> Ove evaluatio e.g.cost ercises ercises xamina s:	ed on V s list, d rview c on proc t-cons t-cons tion or c	DI 2206, evelopm of methoo edures. cious de cious de	, 2221, 22 lent struc ds, discu velopme	222, amor sturing -> irsive and int, desigr	Överall f intuitive nin accor	rdance
4 5 7	Contents Method Plannin sub-fur Idea ge evaluat Selecte with stree Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio	s: lical developing, tasks, spector actions, function eneration/creation of alternation ad developments ad developments	ment of product ifications/requi- ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rd of credit point pass le (in the followin instrumentation	ercises	ed on V s list, d rview c on proc t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de cious de <u>oral exan</u> mmes) 3.Sc.), En	, 2221, 22 lent struct ds, discu velopme nination gineering	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
4 5 7 3	Contents Method Plannin sub-fur Idea ge evaluat Selecte with stre Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.)	s: lical developing, tasks, spectrons, functions, functions, function of alternation/creation of alternated developments and developments of teaching: a sem. lesson tion requirements of None fassessment: examination, site for the aware examination, of the modulinology and line, Mechanical	ment of product ifications/requi- ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e: rd of credit point pass le (in the followin nstrumentation Engineering (B	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: eg study Engine .Eng.) a	ed on V s list, d rview c on proc t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de cious de <u>oral exan</u> mmes) 3.Sc.), En	, 2221, 22 lent struct ds, discu velopme nination gineering	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
4 5 6	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stre Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.)	ical developing, tasks, specinctions, functions, function of alternation/creation of alternated developments of alternation (creation of alternated developments) teaching: teaching: teaching: teaching: ton requirement None assessment: examination, site for the aware examination, on of the module (nology and ling), Mechanical nee of the grade	ment of product ifications/requi- ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rd of credit point pass le (in the followin instrumentation	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: eg study Engine .Eng.) a	ed on V s list, d rview c on proc t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de cious de <u>oral exan</u> mmes) 3.Sc.), En	, 2221, 22 lent struct ds, discu velopme nination gineering	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
4 5 7 8 9	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stre Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.)	ical developing, tasks, specinctions, functions, function of alternation/creation of alternated developments of alternation of alternation of alternation of assessment: a sem. lesson tion requireme None fassessment: examination, site for the aware examination, site for the aware anology and ling, Mechanical nee of the grade ing to BRPO	ment of product ifications/requi- ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e: rd of credit point pass le (in the followin nstrumentation Engineering (B	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: eg study Engine .Eng.) a	ed on V s list, d rview c on proc t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de cious de <u>oral exan</u> mmes) 3.Sc.), En	, 2221, 22 lent struct ds, discu velopme nination gineering	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
4 5 7 8	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stree Participa Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.) Importar accordi	ical developing, tasks, spector actions, function eneration/creation of alternation/creation of alternation/creation of alternation developments and developments action requirements in requi	ment of produc ifications/requi ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rd of credit point pass ue (in the followin nstrumentation Engineering (B e for the final grad	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: eg study Engine .Eng.) a	ed on V s list, d rview c on proc t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons t-cons	DI 2206, evelopm of methoo cedures. cious de cious de <u>oral exan</u> mmes) 3.Sc.), En	, 2221, 22 lent struct ds, discu velopme nination gineering	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
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4 5 7 8 9	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stre Participa Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.) Importar accordi Module of Prof. Dr	ical developing, tasks, spector actions, function eneration/creation of alternated development esses) fetaching: a, sem. lesson tion requirement None assessment: examination, site for the aware examination on of the modul inology and ling, Mechanical ice of the grade ing to BRPO coordinator: Ing. Klaus D formation:	ment of product ifications/requi- ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e e combination e: rrd of credit point pass ule (in the followin hstrumentation Engineering (B e for the final grad	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: ig study Engine .Eng.) a de:	ed on V s list, d rview c on proc t-cons t-cons t-cons tion or d programering (E nd Med	DI 2206, evelopm of methoo edures. cious de cious de oral exan mmes) 3.Sc.), En-	2221, 22 eent struct ds, discu velopme nination gineering cs (B.Sc.)	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance
4 5 7 3 9	Contents Methoc Plannin sub-fur Idea ge evaluat Selecte with stre Participa Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio Biotech (B.Eng.) Importar accordi Module of Prof. Dr	ical developing, tasks, specinctions, functions, function of alternation/creation of alternated developments of alternated developments of the species of the species of the avaitation, site for the avaitation of the modulation of the modulation of the grade ing to BRPO coordinator: Ing. Klaus Different of the avaitation of the grade ing to an of the avaitation of the grade ing to an of	ment of produc ifications/requi ional structure, ativity process tive solutions, e ent guidelines (e s, practical exe nts: e combination e rd of credit point pass ue (in the followin nstrumentation Engineering (B e for the final grad	ets (base irement -> Ove evaluatio e.g. cost ercises ercises xamina s: ig study Engine .Eng.) a de:	ed on V s list, d rview c on proc t-cons t-cons t-cons tion or d programering (E nd Med	DI 2206, evelopm of methoo edures. cious de cious de oral exan mmes) 3.Sc.), En-	2221, 22 eent struct ds, discu velopme nination gineering cs (B.Sc.)	222, amor cturing -> rsive and nt, desigr	Överall f intuitive nin accor	rdance

Identi numb 1311 1	ification per:	Workload:	Credits:	0						
1311				Stud	ly seme		Frequence offer	cy of the	Duratio	on:
1		150 h	5	6th	sem.		Annual (Summe	er)	1 sem	
	Course:	1	Planned group	sizes	Scop	e		contact lassroom	Self-stud	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly	15	h	22.5	h
	Exercise		20 students		0	weekly	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
2			nd the associat	eddev	elopme	ent metho	odology			
3	accordi Sensor samplin Sensor Sensor window Constru Integrat (mC, DS	s: on of terms, ng to applica signal chain: processing an og theorem signal proces error correction ing, design an action of technology, int SP, FPGA), con	categorisation tions, sensor ch d conditioning, sing: on, discrete-tir nd implementat nical sensor sys elligent sensor nnectivity/netw dology and app	naracte , design ne proc tion of c stems: rs, indir <i>r</i> ork cor	erisation nand re cessing digital f ect/virt nnectic	n (accura ealisation of analc ilters ual sense	acy, reso n of analo ogue sign	lution, ser ogue filter nals, spec	nsitivity, lir rs, ADU/D, ctral analys	nearity) AU, sis/FFT,
4		teaching: , sem, lesson:	s with compute	erexerc	ises, pr	actical c	ourse			
ō		tion requirement								
	Content:	Com Elect	rical Engineeri puter Science ronics (1063 M nces, 1065 Ind	s, 1070 lechatr	Industr onics. ⁻	ial Engin 1067 and	ieering a I 1069 Er	nd Mana ngineering	gement), g Comput	-

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 coordinator:
	Prof. DrIng. Joachim Waßmuth
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

			Marketing						IMM	
numb	fication	Workload:	Credits:	Stud	y semes		Frequency offer	of the	Duration	า:
1115		150 h	5	6th	sem.		Annual		1 sem.	
							(Summer))		
1	Course:		Planned group	sizes	Scop	е	Actual co		Self-stud	у
							time / cla teaching	ssroom		
	Lecture		60 students		2	weekly hours	32	h	43	h
	Sem. les	sons	30 students		2	weekly hours	32	h	43	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		l or seminar	15 students		0	weekly hours	0	h	0	h
	•	ed self-study	60 students		0	weekly hours	0	h	0	h
2	-	outcomes/con	npetences: ecture, students		oble to					
	•	examples an present the re critically refle recapitulate	ecial features a od case studie esults. ect on the spec the course con eally, they will f	es and i ial featu tent ind	indepe ures and lepende	ndently d tasks o ently and	solve the finternati I deepen t	associa onal mar heir knov	ited tasks keting. vledge thr	and rough
	Contents		ationalMarket	ing			dovelopp	nent		
3	• • •	Coordination Environmenta Risk analysis Planning mar Market entry	keting objectiv decisions	/es			developi			
	• • • • •	Coordination Environmenta Risk analysis Planning mar Market entry Marketing ins	al analysis keting objectiv	/es			develop			
	• • • • Forms of	Coordination Environmenta Risk analysis Planning mar Market entry Marketing ins f teaching:	al analysis keting objectiv decisions	ves ernatio	nalmar	keting				
4	Forms of Lecture	Coordination Environmenta Risk analysis Planning mar Market entry Marketing ins f teaching: e, sem. lessons	al analysis keting objectiv decisions struments in int s with exercise	ves ernatio	nalmar	keting				
4	Forms of Lecture Participa Formal:	Coordination Environmenta Risk analysis Planning mar Market entry Marketing ins f teaching: e, sem. lesson tion requirements	al analysis keting objectiv decisions struments in int s with exercise nts:	ves ernation s, case	nalmar	keting √ case st	udies			
ł	Forms of Lecture Participa	Coordination Environmenta Risk analysis Planning mar Market entry Marketing ins f teaching: e, sem. lessons tion requirement None Know	al analysis keting objectiv decisions struments in int s with exercise	ves ernation s, case contents	nalmar	keting √ case st	udies			

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 coordinator:
	Prof. Dr. rer. oec. Klaus Rüdiger
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Coll	oquium								KOL	
Ident num	tification ber:	Workload:	Credits:	Stu	dy seme		Frequency offer	of the	Duratic	n:
1290	C	90 h	3	6th	or 7ths	sem.	Eachsem	nester		
1	Course:		Planned grou	p sizes	Scop	e	Actual ce time / cla teaching		Self-stuc	dy
	Lecture		60 students		0	weekly hours	0	h	90	h
	Sem. less	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
	Supervise study	ed self-study	60 students		0	weekly hours	0	h	0	h
		the candida								
		the bachelo	r thesis, its su related refere	ıbject-r	elated f	oundatic	ons, its int	erdiscipl	inary con	
3	and its r Contents - Cor - Dis in th	the bachelo non-subject- : ntent of the th putation on th ne context of	r thesis, its su related refere esis accordir ne procedure	ibject-r nces, as	elated f s well as	oundatic its signif	ons, its int ficance fo	erdiscipl r practic	inary con al applica	tions.
3	and its r Contents - Cor - Dis in th Forms of	the bachelo non-subject- : ntent of the th putation on th ne context of teaching:	r thesis, its su related refere esis accordir ne procedure	nces, as ng to the in the p	elated f s well as	oundatic its signif	ons, its int ficance fo	erdiscipl r practic	inary con al applica	tions.
	Contents - Cor - Dis in th Forms of Oral exa	the bachelo non-subject- : ntent of the th putation on th ne context of teaching: amination for ion requireme None	r thesis, its su related references nesis accordin ne procedure the thesis the bachelor nts:	ibject-r nces, as ng to the in the p thesis	elated f s well as e topic reparati	oundatic its signif	ons, its int ficance fo	erdiscipl r practic	inary con al applica	tions.
4	and its r Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of	the bachelo non-subject- : ntent of the th putation on th ne context of teaching: amination for ion requireme None	r thesis, its su related references lesis accordin the procedure the thesis the bachelor nts:	ibject-r nces, as ng to the in the p thesis	elated f s well as e topic reparati	oundatic its signif	ons, its int ficance fo	erdiscipl r practic	inary con al applica	tions.
4	and its r Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of Oral exa	the bachelo non-subject- : ntent of the th putation on th ne context of teaching: amination for ion requireme None assessment: amination	r thesis, its su related references lesis accordin the procedure the thesis the bachelor nts:	nces, as ng to the in the p thesis	elated f s well as e topic reparati	oundatic its signif	ons, its int ficance fo	erdiscipl r practic	inary con al applica	tions.
4 5 6	and its r Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of Oral exa Prerequis Application Application Engineen Mechat Manage	the bachelo non-subject- entent of the the putation on the ne context of teaching: amination for iteaching: amination for iteaching: amination ite for the modu iteaching: amination ite for the modu iteaching: amination iteaching: amination aminat	r thesis, its surelated references accordinate procedure the thesis the bachelor nts:	ibject-r nces, as ing to the in the p thesis bachelo nts: ing stud echnolo Engine le Ene	elated f s well as etopic reparation r thesis y program gy and lip eering (oundatio its signif	ons, its int ficance fo e thesis ar htation En Mechani	erdiscipl r practic d the qu gineering cal Eng	inary con al applica estions th g (B.Sc.), E ineering	tions. at arose
4 5 6 7	and its r Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of Oral exa Prerequis Application Application Enginee Mechat Manage	the bachelo non-subject- entent of the the putation on the ne context of teaching: amination for ion requireme None Trea assessment: amination site for the awa on of the modu Mathematic ering (B.Eng.) ronics (B.Sc.) ce of the grade	r thesis, its surelated references according the procedure the thesis the bachelor ints:	ibject-r nces, as ing to the in the p thesis bachelo nts: ing stud echnolo Engine le Ene	elated f s well as etopic reparation r thesis y program gy and lip eering (oundatio its signif	ons, its int ficance fo e thesis ar htation En Mechani	erdiscipl r practic d the qu gineering cal Eng	inary con al applica estions th g (B.Sc.), E ineering	tions. at arose
4 5 6 7 8	and its n Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of Oral exa Prerequis Application Application Application Application Application Application Mechat Manage	the bachelo non-subject- entent of the the putation on the ne context of teaching: amination for iteaching: amination for iteaching: amination ite for the modu iteaching: amination ite for the modu iteaching: amination iteaching: amination aminat	r thesis, its surelated references accordinate procedure the thesis the bachelor nts:	ibject-r nces, as ing to the in the p thesis bachelo nts: ing stud echnolo Engine le Ene	elated f s well as etopic reparation r thesis y program gy and lip eering (oundatio its signif	ons, its int ficance fo e thesis ar htation En Mechani	erdiscipl r practic d the qu gineering cal Eng	inary con al applica estions th g (B.Sc.), E ineering	tions. at arose
4 5 7 8 9	and its r Contents - Cor - Dis in th Forms of Oral exa Participat Formal: Content: Forms of Oral exa Prerequis Applicatio Applicatio Applicatio Enginee Mechat Manage	the bachelo non-subject- entent of the the putation on the ne context of teaching: amination for ion requireme None Trea assessment: amination site for the awa on of the modu Mathematic ering (B.Eng.) ronics (B.Sc.) ce of the grade ng to BRPO coordinator:	r thesis, its surelated references accordinate procedure the thesis the bachelor nts:	ibject-r nces, as ing to the in the p thesis bachelo nts: ing stud echnolo Engine le Ene	elated f s well as etopic reparation r thesis y program gy and lip eering (oundatio its signif	ons, its int ficance fo e thesis ar htation En Mechani	erdiscipl r practic d the qu gineering cal Eng	inary con al applica estions th g (B.Sc.), E ineering	tions. at arose

11.0	ineering L	Designing Wit	n Plastics						KMK	
numb	ification per:	Workload:	Credits:	Study	/ semes		Frequenc [.] offer	y of the	Duratio	n:
1123		150 h	5	4th c			Annual (Summer)		1 sem.	
1	Course:		Planned group	sizes	Scop	e	Actual c time / cl teaching	assroom	Self-stud	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		1	weekly hours	15	h	22.5	h
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
2			e to design co They can asse	•		•		2		
	materia select s	l and the tool. uitablemater	e to design cc They can asse ials for a specif iple tool to mar	ess the p fic applic	roperti cation.	es of pla They kno	stics in p ow the ne	rocessinę ecessary t	ganduse	andthu
	and car	ruesigira siri		luiaciui	eann		nouidea	part.		
3	 Manur Proce Mater Mould 	cs as constru facturing (pro ss simulation ial mechanic	s, material sele on and standar	ction wit	ection n thdata	noulding bases				
		ral design rul	38							
4		teaching:								
4	Lecture	teaching:	actical course nts:							
5	Lecture Participat Formal: Content: Forms of	teaching: , exercise, praise, praise ion requireme None assessment:	actical course hts: e							
5	Lecture Participat Formal: Content: Forms of Written Prerequis	teaching: , exercise, pr. ion requireme None assessment: exam or com ite for the awa	actical course hts: bination exam rd of credit point							
5	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio	teaching: , exercise, praion requirement None assessment: exam or com site for the awa examination on of the modu	actical course hts: bination exam rd of credit point	ts: ng study						
5 6 7	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechar Importan accordi	teaching: , exercise, pro- ion requirement None assessment: exam or com site for the awa examination on of the modu nical Enginee ce of the grade ng to BRPO	actical course hts: bination exam rd of credit point pass le (in the followir	ts: ng study nd Mech						
5 6 7 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechar Importan accordi Module o Prof. Dr.	teaching: , exercise, pr. ion requirement None assessment: exam or com site for the awa examination on of the modu nical Enginee ce of the grade ng to BRPO coordinator: -Ing. Christo	actical course hts: bination exam rd of credit point pass le (in the followir ring (B.Eng.) an	ts: ng study nd Mech						
5 6 7 8 9	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechar Importan accordi Module o Prof. Dr. Other infi	teaching: , exercise, pra- ion requirement None assessment: exam or com site for the awa examination on of the modu nical Enginee ce of the grade ng to BRPO coordinator: -Ing. Christo ormation:	actical course hts: bination exam rd of credit point pass le (in the followir ring (B.Eng.) an of the final gra	ts: ng study nd Mech de:	atronic	cs(B.Sc.)	2.			

	chanical D	Design 1							KM1	
	ntification nber:	Workload:	Credits:	Stuc	ly semes		Frequenc offer	y of the	Duratio	on:
112		150 h	5	2nd	l sem.		Annual		1 sem	
	-		-				(Summe	er)		
-	Courses				Case		Astusl		Calf at u	-h -
1	Course:		Planned group	SIZES	Scop	e	Actual o time / c teachin	lassroom	Self-stud	ду
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours		h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		or seminar	15 students		1	weekly hours		h	22.5	h
		ed self-study	60 students		0	weekly hours	0	h	0	h
2	-	outcomes/con	-							
			ne basic featu		-					
	-		plied strength	• •						
	enable	s them to carr	y out practical	strengt	h chec	ks and re	calculat	ions of se	lected co	nnectic
	method	ls and machir	ne elements. It i	s possi	ble for t	he stude	ents to de	evelopan	dassess	solutior
	for con	structivetask	s themselves b	y apply	ringthe	knowled	lge they	havegair	ned.	
				, , , ,	0		0)	Ũ		
3	Contents	8:								
	Fundar	nentals of Des	sian							
		l Strength	0							
		alongai	nathcalculatio	ne						
	TITLE at	d fatique etre								
		nd fatigue stre	Inglitealculation	5115						
	Axlesa	nd shafts	-	5115						
	Axles a Basics	nd shafts of bearing arr	-							
	Axles a Basics Rolling	nd shafts of bearing arr bearing	angements							
	Axles a Basics Rolling Materia	nd shafts of bearing arr bearing Il-, form- and	-		ection n	nethods				
4	Axles a Basics Rolling Materia	nd shafts of bearing arr bearing il-, form- and teaching:	angements friction-locking		ection n	nethods				
	Axles a Basics of Rolling Materia Forms of Lecture	nd shafts of bearing arr bearing Il-, form- and teaching: a, seminar, pra	angements friction-locking acticals		ection n	nethods				
	Axles a Basics Rolling Materia Forms of Lecture Participa	nd shafts of bearing arr bearing II-, form- and teaching: a, seminar, pra tion requireme	angements friction-locking acticals nts:		ection n	nethods				
4	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal:	nd shafts of bearing arr bearing il-, form- and teaching: a, seminar, pra- tion requireme None	angements friction-locking acticals nts:		ection n	nethods				
5	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content:	nd shafts of bearing arr bearing il-, form- and teaching: a, seminar, pra tion requireme None None	angements friction-locking acticals nts:		ection n	nethods				
5	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content:	nd shafts of bearing arr bearing Il-, form- and teaching: a, seminar, pra tion requireme None assessment:	angements friction-locking acticals nts: e	gconne				oral evan		
	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term participa	nd shafts of bearing arr bearing II-, form- and teaching: a seminar, pra- tion requireme None assessment: aper, written e	angements friction-locking acticals hts: e e exam, combina	gconne			e exam,	oral exam	norexam	
5	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom	nd shafts of bearing arr bearing al-, form- and teaching: b, seminar, pra- tion requireme None assessment: aper, written e banying the c	angements friction-locking acticals hts: e e exam, combina ourse	g conne			e exam,	oral exam	1 or exam	
5	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom	nd shafts of bearing arr bearing al-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e coanying the co site for the awa	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point	g conne tion exa	am, per	formanc	e exam,	oral exam	norexam	
5 6 7	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module	nd shafts of bearing arr bearing il-, form- and teaching: a, seminar, pra- tion requireme None seessment: aper, written e oanying the c site for the awa examination	angements friction-locking acticals hts: e e exam, combina ourse	tion exists assesses	am, per	formanc	e exam,	oral exam	1 or exam	
5 6 7	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati	nd shafts of bearing arr bearing il-, form- and teaching: a, seminar, pra- tion requireme None seessment: aper, written e oanying the c site for the awa examination	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point pass and course	tion exists assesses	am, per	formanc	e exam,	oralexam	norexam	
5 6 7 8	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati	nd shafts of bearing arr bearing al-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e coanying the co site for the awa e examination on of the modu tronics (B.Sc.)	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point pass and course	tion exa se asse	am, per	formanc	e exam,	oral exam	n or exam	
5	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechat Importar accord	nd shafts of bearing arr bearing al-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e canying the c site for the awa e examination on of the modu tronics (B.Sc.) and to BRPO	angements friction-locking acticals nts: e exam, combina ourse rd of credit point pass and cours le (in the followir	tion exa se asse	am, per	formanc	e exam,	oralexam	nor exam	
5 6 7 8	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechat Importar accord	nd shafts of bearing arr bearing il-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e banying the c banying the c banyi	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point pass and course le (in the following e for the final gra	tion exa se asse	am, per	formanc	e exam,	oral exam	norexam	
5 6 7 8 9	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechai Importar accord Module Prof. Dr	nd shafts of bearing arr bearing al-, form- and teaching: a seminar, pra- tion requireme None assessment: aper, written e banying the c banying the c banyin	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point pass and course le (in the following e for the final gra	tion exa se asse	am, per	formanc	e exam,	oral exam	norexam	
5 6 7 8 9	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechat Importar accord Module Prof. Dr	nd shafts of bearing arr bearing al-, form- and feaching: a, seminar, pra- tion requireme None assessment: aper, written e banying the c banying the c banyi	angements friction-locking acticals nts: e exam, combina ourse rd of credit point pass and cours ile (in the followin e for the final gra ürkopp	tion example assenges to the second sec	am, per essmen program	formanc t mmes)		oral exam	norexam	
5 6 7 8 9 10 11	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechat Importar accord Module Prof. Dr Other int Literatu	nd shafts of bearing arr bearing al-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e canying the c site for the awa e examination on of the modu tronics (B.Sc.) ace of the grade ing to BRPO coordinator: Ing. Klaus D formation: ure will be ann	angements friction-locking acticals nts: e e exam, combina ourse rd of credit point pass and course le (in the following e for the final gra	tion example assenges to the second sec	am, per essmen program	formanc t mmes)		oralexam	nor exam	
5 6 7 8 9 10	Axles a Basics of Rolling Materia Forms of Lecture Participa Formal: Content: Forms of Term pa accom Prerequi module Applicati Mechat Importar accord Module Prof. Dr	nd shafts of bearing arr bearing al-, form- and teaching: a, seminar, pra- tion requireme None assessment: aper, written e coanying the c site for the awa e examination on of the modu tronics (B.Sc.) nee of the grade ing to BRPO coordinator: Ing. Klaus D formation: are will be ann te:	angements friction-locking acticals nts: e exam, combina ourse rd of credit point pass and cours ile (in the followin e for the final gra ürkopp	tion example assenges to the second sec	am, per essmen program	formanc t mmes)		oral exam	nor exam	

Mec	chanical D	esign 2							KM2		
Ident numl	tification ber:	Workload:	Credits:	Stud	y seme		Frequency offer	y of the	Duratio	Duration:	
1126		150 h	5	3rd	sem.		Annual (Winter)		1 sem.		
1	Course:		Planned group	sizes	Scop)e	Actual c time / cl teaching	assroom	Self-stu	dy	
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h	
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h	
			<i>i</i> e systems wi		erenti	equirem	енкэ. Ву	Comple	-		
	solution	ns to be weigh			e to desi	gn, anal	yse and	develop	differen		
3	solution Contents Shaft-h Extende Plain be Belts an Gears a	ns to be weigh web connection ed dimension earings nd chains and gearing	ing of rolling be	ch other	·.		-	yse and	develop	differen	
3	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of	ns to be weigh sub connectioned dimension earings and chains and gearing ation, construe teaching:	ned against eac ons ing of rolling be ction and desig	ch other	·.		-	yse and	develop	differen	
4	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture	as to be weigh abub connection and chains and chains and gearing ation, construct teaching: a, seminar, pra- tion requirement None	ned against eac ons ing of rolling be ction and desig acticals nts:	earings	roduct	example	9		develop	differen	
4	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content:	as to be weigh abub connection ed dimension earings and chains and gearing ation, construct teaching: e, seminar, pra- tion requirement None Parti	ned against eac ons ing of rolling be ction and desig acticals nts: e cipation in the exam, combina	earings	roduct	example nanical De	esign 1' (1	125)		differen	
4 5	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content: Forms of Term pa accomp	as to be weigh as to be weigh aub connection and chains and chains and gearing ation, construct teaching: a, seminar, pra- tion requirement Non- Partion assessment: aper, written of banying the cosite for the awa	ned against eac ons ing of rolling be ction and desig acticals nts: e cipation in the exam, combina	nof a p module	roduct 'Mech	example nanical De	esign 1' (1	125)		differen	
4 5 6 7	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content: Forms of Term pa accomp Prerequis Module Applicatio	as to be weight as to be weight aub connection ead dimension ead dimension earings and chains and gearing ation, construct teaching: assessment: aper, written e coanying the co site for the awa e examination on of the modu cronics (B.Sc.)	ed against eac ons ing of rolling be ction and desig acticals nts: e cipation in the exam, combina course ard of credit point pass and cours le (in the followin	n of a p module tion exa s: g study	roduct 'Mech am, per	example panical De formanc	esign 1' (1	125)		differer	
4 5 7 8 9	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content: Forms of Term pa accomp Prerequis Module Applicatio Mechat	as to be weight as to be weight aub connection ead dimension earings and chains and gearing ation, construe teaching: a, seminar, pra- tion requireme Non Parti assessment: aper, written e coanying the co site for the awa examination on of the mode cronics (B.Sc.) ice of the grad- ing to BRPO	ned against eac ons ing of rolling be ction and desig acticals nts: e cipation in the exam, combina course ard of credit point pass and cours ule (in the followin	n of a p module tion exa s: g study	roduct 'Mech am, per	example panical De formanc	esign 1' (1	125)			
4 5 7 8 9 10	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content: Forms of Term pa accomp Prerequis Module Mechat Importan accordi Module o	is to be weight as to be weight aub connection end dimension earings and chains and gearing ation, construct teaching: a seminar, pra- tion requirement apper, written of partice assessment: apper, written of conying the consister for the awar examination on of the modu cronics (B.Sc.) ing to BRPO coordinator: Ing. Klaus D	ned against each ons ing of rolling be ction and desig acticals nts: acticals icipation in the exam, combina course ard of credit point pass and cours ule (in the followin) a for the final grad	n of a p module tion exa s: g study	roduct 'Mech am, per	example panical De formanc	esign 1' (1	125)			
4 5 7 8 9	solution Contents Shaft-h Extende Plain be Belts an Gears a Calcula Forms of Lecture Participat Formal: Content: Forms of Term pa accomp Prerequis Module Mechat Importan accordi Module o	as to be weight as to be weight aub connection ed dimension earings and chains and gearing ation, construct teaching: assessment: aper, written e coanying the co site for the awa examination on of the modu cronics (B.Sc.) ace of the gradi ing to BRPO coordinator: Ing. Klaus D ormation: are will be ann	ned against each ons ing of rolling be ction and desig acticals nts: acticals icipation in the exam, combina course ard of credit point pass and cours ule (in the followin) a for the final grad	nof a p module tion exa s: se asse g study de:	roduct e'Mech am, per program	example panical De formance t mmes)	e esign 1' (1 e exam, c	125)			

Con	struction	Basics							KG	
Ident num	tification ber:	Workload:	Credits:	Stud	y seme:		Frequency offer	y of the	Duration: 1 sem.	
1129)	150 h	5	1st s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group	sizes	Scop	e	Actual c time / cl teaching	assroom	Self-stue	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		or seminar	15 students		1	weekly hours	15	h	22.5	h
2		ed self-study	60 students		0	weekly hours	0	h	0	h
	assemb They ur with the Studen	blies as well as inderstand tec CAD system	o structure co	wings. gs and l	know d	ifferent	oossibiliti	es of cor	struction	analysis
3	surface and pr	rdisation. Dra s. Fundamen ocessing of	wing reading. D tals of Materials geometric d ods of design a	s Scieno ata. Aj	ce. Stru	ucture an	d functic	ning of C	AD syste	ms. Inpu
4		f teaching: e, exercise, pr	actical course							
5	Participa Formal: Content:	tion requireme None None	Э							
6	Forms of	assessment:	 performance e	examina	ation or	oralexa	mination			
7	Prerequis	site for the awa	rd of credit point pass and cours	S:						
8	Biotech	nology and Ir	ile (in the followinnstrumentation	Engine			Mechatr	onicsB.S	C.	
9	accord	ing to BRPO	e for the final gra	de:						
10	Prof. Dr	coordinator: Ing.Herbert formation:	Funke							
11			TechnischesZ	Zoichno	nd obi		niachao	Zaiahna	a vorioua	DIN

12	Language:
	German

	tics Tech	nology								KT	
	dentification Work number: 1134 150		ad:	Credits:	Stud	y semes		Frequency offer	of the	Duration: 1 sem.	
1134		150 h		5 2n		or 6th	sem.	Annual (Summer	·)		
1	Course:			Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture			60 students		2	weekly hours	30	h	45	h
	Sem. les	sons		30 students		1	weekly hours	15	h	22.5	h
	Exercise			20 students		0	weekly hours	0	h	0	h
	Practical	or semir	ar	15 students		1	weekly hours	15	h	22.5	h
	Supervis			60 students betences:		0	weekly hours	0	h	0	h
3	compor practice evaluat Contents - Histor - Gene - Mode - Micro - Synth - Mech - Rheol - Proce	nent pro e for the e the use ry of plas ral diffe el conce bstructur hesis of p anical b ogy (flo essing m	e duction e of pla stics, e rences ption a es, cry plastics ehavion w prop ethod	our (moduluso erties, viscosi	ents car actical/ ustaina ificance gy (struc nditions f elastic ty and v	n appl experi bility p ctural d ctural d city, cre iscosit	y the th mental re erspectiv esign) eep mod y model	eoreticall esults. Stu ve. ulus) s)	y acquir	ed know	ledge i
4	- Selec - Use o	tion of n	nateria s unde	ing on the ma I for specific a er sustainability	pplicat	ions		Jerties			
4	Lecture	es, semir	har, pra	ctical course							
5	Formal: Content:	tion requ	None None	.5.							
	Forms of	fassessm examin	ient:	ombinatione	xamina [.]	tion or o	oralexar	mination			
6				d of credit points							
	Prerequi		nation r	200							
7	Prerequis Module Application	examir on of the	e module	e (in the followin							
7 8	Prerequis Module Application Mechan Importan	e examir on of the nical Eng nce of the	e module gineeri e grade		Mecha						
6 7 8 9 10	Prerequis Module Application Mechan Importan accordin Module of Prof. Dr	examir on of the nical Eng	e module gineeri grade RPO or: or:	e (in the followin ng B.Eng.and for the final grad	Mecha						

12	Language:
	German

LUGI	istics								LOG	
Ident numb	ification per:	Workload:	Credits:	Study	/ semes		Frequency offer:	y of the	Durati	on:
1142	150		5	4th s	4th semester				1 sem.	
							(Summer)			
1	Course:		Planned group sizes:		Scope:		Actual contact time/classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours		h	45	h
	Sem. less	ons	30 students		2	weekly hours	30	h	45	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
2	Learning	outcomes/con	npetences:							
3	Contents: Goals, tas - Logistic - Supply - Multimo - Operati - Procure - Wareho - Order p	problems car sks and functio s planning and Chain Manage dal transport s onal logistics ment logistics suse logistics buse logistics bicking	ment			timised u	sing suitab	ble metho	ds.	
	- Distribu	ion logistics tion logistics	on methods in log	nietice						
I	-	ire systems		90000						
4	Forms of	-								
	Lecture, s	sem. lessons w	ith exercises							
5		ion requireme								
	Formal:	None								
	Content:	None								
6		ssessment:	mbin oti	o oti - r	o		nin etterr			
7			mbination examined of credit points		ertorma	ince exar	nination o	r oral exa	mination	
				5.						
1				a studv	program	nmes):				
	Applicatio	examination pa	ile (in the followin		- Seran					
8		n of the modu								
	Industrial	on of the modu Engineering a	ile (in the followin nd Management e for the final grad	B.Sc.						
_	Industrial Important	on of the modu Engineering a	nd Management	B.Sc.						
8	Industrial Importance according	n of the modu Engineering a ce of the grade	nd Management	B.Sc.						
8 9	Industrial Importance according Module c	n of the modu Engineering a ce of the grade g to BRPO	nd Management e for the final grad	B.Sc.						

12	Language:
	German

	hematics	1							MA1		
lden num	tification ber:	Workload:	Credits:	Stud	y seme:		Frequenc [.] offer	y of the	Duration:		
1149	9	150 h	5	1st s	1st sem.			Annual (Winter)		1 sem.	
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. less	sons	30 students		2	weekly hours	30	h	45	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h	
		ed self-study outcomes/com	60 students		0	weekly hours	0	h	0	h	
2	mathen and pro	natical proble pcedures they	r with the math ms can be solv / have learned ions to these p	ved inde and the	epende eir matl	ently. Stu	dents are	abletoa	pply the	methods	
3	Contents										
	- Defini - Limit - Impor - Comp - Differe - Integr - Applie	tion of function value and con- tant function blex numbers entiating a fur- ration cation to tech	al classes and their appli nction and its ru	, basic t cation	erms		tions				
4	- Defini - Limit - Impor - Comp - Differo - Integr - Applio Forms of Lecture	tion of function value and con- tant function olex numbers entiating a fur- ration <u>cation to tech</u> teaching: b, sem. lessons	ons and curves atinuity al classes and their appli- nction and its ru <u>nical issues</u> s with exercises	cation ules, cui	erms		tions				
4	- Defini - Limit - Impor - Comp - Differo - Integr - Applio Forms of Lecture	tion of function value and con- tant function of tant function of the second teaching a fur- tration cation to tech teaching: b, sem. lessons tion requirement None	ons and curves ntinuity al classes and their appli- nction and its ru <u>nical issues</u> s with exercises nts:	cation ules, cu	erms ve dise	cussion	tions				
	 Definit Limit Impor Comp Differed Integr Applie Forms of Lecture Participati Formal: Content: Forms of 	tion of function value and con- tant function olex numbers entiating a fur- ration cation to tech teaching: , sem. lessons tion requirement None Know	ons and curves attinuity al classes and their appli- nction and its ru nical issues s with exercises nts:	cation ules, cui s	erms ve dise ematio	cussion					
5	 Defini Limit Impor Comp Differed Integr Integr Applid Forms of Lecture Participat Formal: Content: Forms of Written Prerequise 	tion of function value and con- tant function olex numbers entiating a fur- ration cation to tech teaching: s.sem. lessons tion requirement None assessment: examination,	ons and curves attinuity al classes and their appli- nction and its run nical issues s with exercises the s with exercises the combination e rd of credit point	cation ules, cui s ool math	erms ve dise ematio	cussion					
5	 Defini Limity Impor Comp Differe Integr Applie Forms of Lecture Participati Formal: Content: Forms of Written Prerequist Module Application Biotech 	tion of function value and con- tant function of tant function of tant function of tant function of the available teaching: a sem. lessons tion requirement assessment: examination, site for the awa examination on of the modu nology and Ir	ons and curves ntinuity al classes and their appli- nction and its run nical issues swith exercises swith exercises swith exercises rund of credit point pass le (in the followin nstrumentation	s cation ules, cur s ol math xamina s: ng study Engine	erms ve disc ematic tion or c	cussion cs oral exar	nination	tronics (B.	.Sc.)		
5 6 7	 Definit Limit Impor Comp Differed Integr Applid Forms of Lecture Participat Formal: Content: Forms of Written Prerequist Module Application Biotech Important accordi 	tion of function value and con- tant function olex numbers entiating a fur- ation cation to tech teaching: , sem. lessons tion requirement know assessment: examination, site for the awa examination on of the modu nology and Ir ice of the grade ng to BRPO	ons and curves ntinuity al classes and their appli- nction and its run nical issues s with exercises the vledge of scho combination ex rd of credit point pass le (in the followin	s cation ules, cur s ol math xamina s: ng study Engine	erms ve disc ematic tion or c	cussion cs oral exar	nination	tronics (B.	.Sc.)		
5 6 7 8	 Definit Limit Impor Comp Differed Integr Integr Applie Forms of Lecture Participat Formal: Content: Forms of Written Prerequise Module Biotech Important accordit Module of Prof. Dr. 	tion of function value and con- tant function of tant function of the numbers entiating a fur- ration cation to tech teaching: a, sem. lessons tion requirement None know assessment: examination, site for the awa examination on of the modu nology and Ir ice of the grade ing to BRPO coordinator: Ing. Rolf Nat	ons and curves attinuity al classes and their appli- nction and its run nical issues s with exercises the section s with exercises vledge of schoor combination es rd of credit point pass the (in the followin nstrumentation e for the final grad	s cation ules, cur s ol math xamina s: ng study Engine	erms ve disc ematic tion or c	cussion cs oral exar	nination	tronics (B.	.Sc.)		
5 6 7 8 9	 Definit Limit Impor Comp Differed Integree Applied Forms of Lecture Participate Formal: Content: Forms of Written Prerequise Module Biotech Important accordit Module of Prof. Dr. Other inf Literature 	tion of function value and con- tant function of tant function of the numbers entiating a fur- ration cation to tech teaching: , sem. lessons tion requirement None know assessment: examination, site for the awa examination on of the modu nology and Ir ce of the grade ng to BRPO coordinator: Ing. Rolf Nation or a will be anne	ons and curves attinuity al classes and their appli- nction and its run nical issues s with exercises the section s with exercises vledge of schoor combination es rd of credit point pass the (in the followin nstrumentation e for the final grad	s basic t cation ules, cui s ol math xamina s: ng study Engine de:	erms ve disc emation tion or o program ering (E	cussion cs oral exar mmes) 3. Sc.) and ne course	nination d Mecha		.Sc.)		

	thematics	2							MA2	
	itification ber:	Workload:	Credits:	Study	y seme:		Frequency offer	y of the	Durati	on:
115	155 150 h		5	2nd	2nd sem.		Annual (Summer)		1 sem.	
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		2	weekly hours		h	45	h
	Exercise		20 students		0	weekly hours		h	0	h
		or seminar	15 students		0	weekly hours	Ŭ	h	0	h
2		ed self-study outcomes/cor	60 students		0	weekly hours	0	h	0	h
2	Contents	-	to think abstrac	ctly and	totind	solution	sareturt	her devel	oped.	
3		•								
		concepts of	vootor olgobro	andan	aliantic	no in ac	omotru			
		•	vector algebra a			-	-			
	- Linear	r algebra: Ca	Iculator operation	on with	vector	s and ma	-			
	- Linear - Linear	r algebra: Ca r systems of e	lculator operation equations and e	on with eigenval	vector lue pro	s and ma blems	-			
	- Linear - Linear - Multic	r algebra: Ca r systems of e limensional d	lculator operation equations and e lifferential calcu	on with eigenval ulus with	vector lue pro napplio	s and ma blems cations	atrices			
4	- Linear - Linear - Multic - Integr	r algebra: Ca r systems of e limensional d	lculator operation equations and e	on with eigenval ulus with	vector lue pro napplio	s and ma blems cations	atrices			
4	- Linear - Linear - Multic - Integr Forms of	r algebra: Ca r systems of e dimensional d ation of rotati teaching:	lculator operation equations and e lifferential calcu	on with eigenval uluswith rical boo	vector lue pro napplio	s and ma blems cations	atrices			
4	- Linear - Linear - Multic - Integr Forms of Lecture	r algebra: Ca r systems of e dimensional d ation of rotat teaching: , sem. lesson tion requireme	lculator operation equations and e lifferential calcu ionally symmetr s with exercises nts:	on with eigenval uluswith rical boo	vector lue pro napplio	s and ma blems cations	atrices			
	 Linear Linear Multic Integr Forms of Lecture Participat Formal: 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson tion requireme None	lculator operations equations and e lifferential calcu- ionally symmetres s with exercises nts: e	on with bigenval ulus with rical boo	vector lue pro applio dies, a	s and ma blems cations	atrices			
5	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson tion requireme None Mod	lculator operation equations and e lifferential calcu ionally symmetr s with exercises nts:	on with bigenval ulus with rical boo	vector lue pro applio dies, a	s and ma blems cations	atrices			
	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson tion requireme None Mod assessment:	Iculator operations equations and e ifferential calcu- ionally symmetr s with exercises nts: e ule Mathemation	on with eigenval uluswith rical boo s cs1(114	vector lue prc applic dies, a dies, a	s and ma oblems cations rc length	s,			
5	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written 	r algebra: Ca r systems of e ation of rotati teaching: , sem. lesson tion requireme None assessment: examination,	Iculator operations equations and e ifferential calcu- ionally symmetr s with exercises nts: e lule Mathemation ex	on with eigenval uluswith rical boo s cs1(114 xaminat	vector lue prc applic dies, a dies, a	s and ma oblems cations rc length	s,			
5	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequise 	r algebra: Ca r systems of e ation of rotati teaching: , sem. lesson tion requireme None assessment: examination,	Iculator operations equations and exercises ionally symmetric s with exercises nts: e ule Mathemation combination exard of credit points	on with eigenval uluswith rical boo s cs1(114 xaminat	vector lue prc applic dies, a dies, a	s and ma oblems cations rc length	s,			
5	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Application 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson ion requireme None None assessment: examination, site for the awa examination on of the modu	Iculator operations equations and e lifferential calcu- ionally symmetr s with exercises nts: e ule Mathemation combination ex ard of credit points pass ule (in the followin	on with eigenvalulus with rical boots s cs1(114 xaminal s: g study	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination			
5 6 7	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Biotech 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson ion requireme None None examination, site for the awa examination on of the modu nology and li	Iculator operations equations and e lifferential calcu- ionally symmetres s with exercises nts: e lule Mathemation combination est pass and of credit points pass ale (in the followin instrumentation	on with eigenvalulus with rical boo s cs1(114 xaminal s: g study Engined	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination	tronics (B	.Sc.)	
5 6 7 8	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Biotech Importan 	r algebra: Ca r systems of e ation of rotati teaching: , sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and li ce of the grade	Iculator operations equations and e lifferential calcu- ionally symmetr s with exercises nts: e ule Mathemation combination ex ard of credit points pass ule (in the followin	on with eigenvalulus with rical boo s cs1(114 xaminal s: g study Engined	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination	tronics (B	.Sc.)	
5 6 7 8 9	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequise Module Application Biotech Importan accordi 	r algebra: Ca r systems of e ation of rotati teaching: , sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and lince of the grade ng to BRPO	Iculator operations equations and e lifferential calcu- ionally symmetres s with exercises nts: e lule Mathemation combination est pass and of credit points pass ale (in the followin instrumentation	on with eigenvalulus with rical boo s cs1(114 xaminal s: g study Engined	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination	tronics (B	.Sc.)	
5 6 7 8 9	 Linear Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequise Module Application Biotech Importan accordi 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson tion requireme None None examination, site for the awa examination on of the modu nology and li ce of the grade ng to BRPO coordinator:	Iculator operations equations and en- internetial calcu- ionally symmetric s with exercises nts: e iule Mathematic combination ex- and of credit points pass ule (in the followin instrumentation e for the final grad	on with eigenvalulus with rical boo s cs1(114 xaminal s: g study Engined	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination	tronics (B	.Sc.)	
5 6 7 8 9 10	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Biotech Importan accordi Module of Prof. Dr. 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson ion requireme None assessment: examination, site for the awa examination on of the modu nology and luce of the grade ng to BRPO coordinator: -Ing. Rolf Na	Iculator operations equations and en- internetial calcu- ionally symmetric s with exercises nts: e iule Mathematic combination ex- and of credit points pass ule (in the followin instrumentation e for the final grad	on with eigenvalulus with rical boo s cs1(114 xaminal s: g study Engined	vector lue pro applie dies, a 9) tion or program	s and ma oblems cations rc length oral exar	nination	tronics (B	.Sc.)	
5 6 7 8 9	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Biotech Importan accordi Module of Prof. Dr. Other infer 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson ion requireme None None examination, site for the awa examination on of the modu nology and li ce of the grade ng to BRPO coordinator: -Ing. Rolf Na ormation:	Iculator operations equations and e lifferential calcu- ionally symmetre s with exercises nts: e lule Mathemation combination ep ard of credit points pass ule (in the followin instrumentation e for the final grad	on with eigenvalulus with rical boo s cs1(114 xaminat s: g study Engined de:	vector lue pro applie dies, an 9) tion or program ering (E	s and ma oblems cations rc length oral exar mmes) 3.Sc.) and	nination		.Sc.)	
5 6 7 8 9	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequist Module Application Biotech Important accordition Module of Prof. Dr. Other information 	r algebra: Ca r systems of e ation of rotati teaching: , sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and li ce of the grade ng to BRPO coordinator: Ing. Rolf Na ormation: re will be ann	Iculator operations equations and en- internetial calcu- ionally symmetric s with exercises nts: e iule Mathematic combination ex- and of credit points pass ule (in the followin instrumentation e for the final grad	on with eigenvalulus with rical boots s cs1 (114 xaminat s: g study Engined de: beginnii	vector lue pro applid dies, a 9) tion or program ering (E	s and ma oblems cations rc length oral exar mmes) 3.Sc.) and ne course	nination d Mechai	,Lothar,	.Sc.)	
5 6 7 8 9 10	 Linear Linear Multic Integr Forms of Lecture Participat Formal: Content: Forms of Written Prerequist Module Application Biotech Important accordition Module of Prof. Dr. Other information 	r algebra: Ca r systems of e dimensional d ation of rotati teaching: , sem. lesson tion requireme None None examination, site for the awa examination on of the modu nology and li ce of the grade ng to BRPO coordinator: Ing. Rolf Na ormation: re will be ann natik für Ingen	Iculator operations equations and e ifferential calcu- ionally symmetr s with exercises nts: e ule Mathemation combination ex and of credit points pass ule (in the followin instrumentation e for the final grad umann	on with eigenvalulus with rical boots s cs1 (114 xaminat s: g study Engined de: beginnii	vector lue pro applid dies, a 9) tion or program ering (E	s and ma oblems cations rc length oral exar mmes) 3.Sc.) and ne course	nination d Mechai	,Lothar,	.Sc.)	

	hematics	3							MA3	
Iden [:] num	tification ber:	Workload:	Credits:	Study	y seme:		Frequency offer	of the	Duration:	
1160		150 h	5 3		sem.		Annual (Winter)		1 sem.	
1	Course:	1	Planned group) sizes	Scop)e	Actual c time / cla teaching	assroom	Self-stu	ıdy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		2	weekly hours	30	h	45	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
	-	ed self-study outcomes/con	60 students		0	weekly hours	0	h	0	h
			ble to apply nical problems		-		•			nematica
		•	nary differentia							
	- Syste - Soluti - Nume - Descr	ple from mec ons of linear c on with the he erical solution ription of func	equations of 2n chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL	ectricale ations w ues and on-linea	engine ith con leigen ar diffe	onstant c ering istant coe vectors rential ec	coefficien efficient quations			
4	 Syste Soluti Nume Descr Introd Forms of 	ple from mec ms of linear c on with the he erical solution ription of func luction to Vec teaching:	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis	ectrical e ations w ues and on-linea _ in the L	engine ith con leigen ar diffe	onstant c ering istant coe vectors rential ec	coefficien efficient quations			
4	 Syste Soluti Nume Descr Introd Forms of Lecture 	ple from means of linear of on with the here erical solution ription of funct luction to Vea teaching: b, sem. lesson tion requireme None	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts:	ectrical e ations w ues and on-linea _ in the L es	engine ith con leigen ar diffe aplace	onstant c ering istant coe vectors rential ec	coefficien efficient quations			
	 Syste Soluti Nume Descr Introd Forms of Lecture Participat Formal: Content: Forms of Written 	ple from med on with the he erical solution ription of func luction to Vec teaching: b, sem. lesson tion requireme None assessment: examination,	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts: e ule Mathemati combination e	ectrical e ations w ues and on-linea in the L s cs2 (115 examinat	engine ith con leigen ar diffe aplace	onstant c ering stant coe vectors rential ec e domain	coefficient efficient juations			
5	 Syste Soluti Nume Description Introde Forms of Lecture Participati Formal: Content: Forms of Written Prerequise Module 	ple from med ms of linear c on with the he erical solution ription of func luction to Vec teaching: , sem. lesson tion requireme None assessment: examination, site for the awa	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL stor Analysis s with exercise nts: e ule Mathemati combination e rd of credit point pass	ectrical e ations w ues and on-linea in the L is cs2 (115 cs2 (115 cs2 (115	engine ith con leigen ar diffe aplace	onstant c ering stant coe vectors rential ec e domain	coefficient efficient juations			
5 6 7 8	 Syste Soluti Nume Descr Introd Forms of Lecture Participati Formal: Content: Forms of Written Prerequis Module Applicatio Biotech 	ple from med on sof linear c on with the he erical solution ription of func- luction to Vec teaching: s, sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and li	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts: e ule Mathemati combination e rd of credit point pass ule (in the followin instrumentation	ectrical e ations w ues and on-linea in the L is cs2 (115 examinat ts: ng_study Engine	engine ith con leigen ar diffe aplace	onstant o ering stant coe vectors rential ec e domain oral exar	coefficient efficient juations nination			
5 6 7 8 9	 Syste Soluti Nume Description Introde Forms of Lecture Participation Formal: Content: Forms of Written Prerequise Module Application Biotech Important accordi 	ple from med on with the he erical solution ription of func- luction to Vec- teaching: b, sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and In- ice of the grade ng to BRPO	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts: e ule Mathemati combination e rd of credit point pass le (in the followin	ectrical e ations w ues and on-linea in the L is cs2 (115 examinat ts: ng_study Engine	engine ith con leigen ar diffe aplace	onstant o ering stant coe vectors rential ec e domain oral exar	coefficient efficient juations nination			
5 6 7 8 9 10	 Syste Soluti Nume Descrition Introde Forms of Lecture Participation Formal: Content: Forms of Written Prerequise Module Application Biotech Important according Module of Prof. Dr. 	ple from med ms of linear of on with the he erical solution ription of func- luction to Veo teaching: , sem. lesson tion requireme None assessment: examination, site for the awa examination on of the modu nology and In ce of the grade ng to BRPO coordinator: Ing. Rolf Na	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts: e ule Mathemati combination e rd of credit point pass ule (in the followin nstrumentation e for the final gra	ectrical e ations w ues and on-linea in the L is cs2 (115 examinat ts: ng_study Engine	engine ith con leigen ar diffe aplace	onstant o ering stant coe vectors rential ec e domain oral exar	coefficient efficient juations nination			
5 6 7 8 9	 Syste Soluti Nume Descr Introd Forms of Lecture Participation Formal: Content: Forms of Written Prerequisting Module Application Biotech Important accordi Module of Prof. Dr. Other inf Literature 	ple from med ms of linear c on with the he erical solution ription of func luction to Vec teaching: a sem. lesson tion requireme None assessment: examination, site for the awa examination, site for the awa examination on of the modu nology and lince of the grade ng to BRPO coordinator: Ing. Rolf Na ormation: re will be ann	chanics and ele lifferential equa elp of eigenvalu methods for no ctions and DGL ctor Analysis s with exercise nts: e ule Mathemati combination e rd of credit point pass ule (in the followin nstrumentation e for the final gra	ectrical e ations w ues and on-linea in the L is cs2 (115 cs2 (115) cs2 (115 cs2 (115) cs2	engine ith con leigen ar diffe aplace 55) tion or o program ering (E	onstant c ering istant coa vectors rential ec e domain oral exar mmes) 3.Sc.) and he course	coefficient efficient quations nination d Mechat	its ronics (B	.Sc.)	

Mec	chatronics	3							ME		
Ident num	ification per:	Workload:	Credits:	Stud	y semes		Frequency offer	of the	Duratio	Duration: 1 sem.	
1164		150 h	5 6th s		sem.		Annual (Summer)		1 sem.		
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h	
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h	
	Technical content: r elements, motion of behaviour and the co Skills: Determination Understanding the w of natural vibration constructive solution analysis). Understanding of me respective operation parameters of the ow		ibration behavi			-		-			
	of natu constru analysis Unders respect parame Softwar	ral vibration octive solution s). tanding of me tive operating eters of the ov re tools: Matla	parameters, ar ns. Determinati echatronicsysto g conditions. A erallsystem.	our of r nalysis on of h ems. Se	nachin of vibi armon lectior	es and v ration pr ic oscilla	ehicles, E oblems, o ations from ensors and	xperime determir m mease d actuate	ntal detern nation of p urements ors suitabl	minatio bossi bl (Fourie e for th	
3	of natu constru analysis Unders respect parame Softwar Contents Exampl compoi movem transmi transfor frequer system memor	ral vibration active solution s). tanding of me tive operating eters of the ov re tools: Matla set tools: Ma	parameters, ar ns. Determinati echatronicsysto g conditions. A erallsystem.	our of r nalysis on of h ems. Se bility to bility to solution for r for r ines, m ind thre f vibrat rs, magi pneum	nachin of vibr armon lection o estim ystems gy cor otation otation ce-mas ion. Pr netic d atic, h	es and v ration pr ic oscilla of the se nate and s, identific nductors, nal mov liagrams ss oscilla roperties rives, ste ydraulic	ehicles. E oblems, c ations from ensors and calculate ca	xperime determin m measu d actuato e the sta the sta MIMO system onducto mechan tion of os nations co natural o pr drives,	ntal determ nation of p urements ors suitable atic and c atic and c scillations of motion, scillations piezo and	mination possible (Fourie e for the lynamic lynamic slationa verters . Fourie natura s. Serve dshape	
	of natu constru analysis Unders respect parame Softwar Contents Exampl compoi movem transfor frequer system microm	ral vibration active solution s). tanding of me tive operating eters of the over the tools: Matla set tools:	parameters, ar hs. Determinati echatronic syste g conditions. A erall system. hb, Simulink. ronic systems, N stem, mechanic / conductors s, driven mach ss, two-mass a tural modes of yes, linear motor A) actuators, stems for actua	our of r nalysis on of h ems. Se bility to bility to dilMO s cal ener for r ines, m ines, m ind thre f vibrat rs, magi pneum tors and	nachin of vibr armon lection o estim ystems gy cor otation otation ce-mas ion. Pr netic d atic, h	es and v ration pr ic oscilla of the se nate and s, identific nductors, nal mov liagrams ss oscilla roperties rives, ste ydraulic	ehicles. E oblems, c ations from ensors and calculate ca	xperime determin m measu d actuato e the sta the sta MIMO system onducto mechan tion of os nations co natural o pr drives,	ntal determ nation of p urements ors suitable atic and c atic and c scillations of motion, scillations piezo and	minatio possible (Fourie e for the lynamic slation noterters . Fourie natura s. Serve dshape	
4	of natu constru analysis Unders respect parame Softwar Contents Exampl compoi movem transfor frequer system memory microm	ral vibration active solution s). tanding of me tive operating eters of the over the tools: Matla set tools:	parameters, ar hs. Determinati echatronic syste g conditions. A erall system. hb, Simulink. ronic systems, N stem, mechanic conductors s, driven mach ss, two-mass a tural modes of ves, linear motor A) actuators, stems for actua	our of r nalysis on of h ems. Se bility to bility to dilMO s cal ener for r ines, m ines, m ind thre f vibrat rs, magi pneum tors and	nachin of vibr armon lection o estim ystems gy cor otation otation ce-mas ion. Pr netic d atic, h	es and v ration pr ic oscilla of the se nate and s, identific nductors, nal mov liagrams ss oscilla roperties rives, ste ydraulic	ehicles. E oblems, c ations from ensors and calculate ca	xperime determin m measu d actuato e the sta the sta MIMO system onducto mechan tion of os nations co natural o pr drives,	ntal determ nation of p urements ors suitable atic and c atic and c scillations of motion, scillations piezo and	minatio possibl (Fourie e for th lynami lynami slation notrers . Fourie natura s. Serv dshape	
4	of natu constru analysis Unders respect parame Softwar Contents Exampl compor movem transfor frequer system memory microm	ral vibration active solution s). tanding of me tive operating eters of the over re tools: Matla set of mechat nents as a system ents, energy ssion, engine rm. One-mas noies and na s, inverter driv y alloy (SM) nechanical system teaching: a, sem. lesson tion requireme None	parameters, ar hs. Determinati echatronic syste g conditions. A erall system. hb, Simulink. ronic systems, N stem, mechanic conductors s, driven mach ss, two-mass a tural modes of ves, linear motor A) actuators, stems for actua s, practical cou nts:	our of r nalysis on of h ems. Se bility to bility to dilMO s cal ener for r ines, m ines, m ind thre f vibrat rs, magi pneum tors and	nachin of vibr armon lection o estim ystems gy cor otation otation ce-mas ion. Pr netic d atic, h	es and v ration pr ic oscilla of the se nate and s, identific nductors, nal mov liagrams ss oscilla roperties rives, ste ydraulic	ehicles. E oblems, c ations from ensors and calculate ca	xperime determin m measu d actuato e the sta the sta MIMO system onducto mechan tion of os nations co natural o pr drives,	ntal determ nation of p urements ors suitable atic and c atic and c scillations of motion, scillations piezo and	minatio possibl (Fourie e for th lynami slation verters . Fourie natura s. Serv dshape	
4	of natu constru analysis Unders respect parame Softwar Contents Exampl compoi movem transfor frequer system memory microm	ral vibration octive solution s). tanding of me tive operating eters of the over re tools: Matla set tools:	parameters, ar hs. Determinati echatronic syste g conditions. A erall system. hb, Simulink. ronic systems, N stem, mechanic conductors s, driven mach ss, two-mass a tural modes of ves, linear motor A) actuators, stems for actua s, practical cou nts:	our of r nalysis on of h ems. Se bility to bility to dilMO s cal ener for r ines, m ines, m ind thre f vibrat rs, magi pneum tors and	nachin of vibr armon lection o estim ystems gy cor otation otation ce-mas ion. Pr netic d atic, h	es and v ration pr ic oscilla of the se nate and s, identific nductors, nal mov liagrams ss oscilla roperties rives, ste ydraulic	ehicles. E oblems, c ations from ensors and calculate ca	xperime determin m measu d actuato e the sta the sta MIMO system onducto mechan tion of os nations co natural o pr drives,	ntal determ nation of p urements ors suitable atic and c atic and c scillations of motion, scillations piezo and	minatic possibl (Fourie e for th lynami slation verter natura s. Serv dshape	
3 4 5 6	of natu constru analysis Unders respect parame Softwar Contents Exampl compoi movem transmi transfor frequer system memory microm	ral vibration active solution s). tanding of me tive operating eters of the over re tools: Matla set of mechat nents as a system ents, energy ssion, engine rm. One-mass noies and nais, inverter driv y alloy (SM) techanical system teaching: a sem. lesson tion requirement None fassessment:	parameters, ar ps. Determinati echatronic syste g conditions. A erall system. b, Simulink. ronic systems, N stem, mechanic / conductors s, driven mach ss, two-mass a tural modes of /es, linear motor A) actuators, stems for actua s, practical cou nts:	our of r nalysis on of h ems. Se bility to dilMO s cal ener for r ines, m nd thre f vibrat rs, magi pneum tors and rse	nachin of vibi armon lection o estim ystems gy con otation otion c ee-mas cion. Pr netic d atic, h d senso	es and v ration pr ic oscilla of the se nate and s, identific nal mov liagrams roperties rives, ste ydraulic ors.	ehicles. E oblems, o ations from ensors and calculate calculate cation of N energy c rements, . Descript ators: Equ ators: Equ of the r pper moto and ma	xperime determin m measi d actuato e the sta athe sta MIMO system onducto mechan tion of os natural of prodrives, agnetost	ntal determ nation of p urements ors suitabl atic and c stems, meanical con- scillations of motion, scillations piezo and crictive ac	minatic possibl (Fourie e for th dynami dynami slation verter . Fourie natura s. Serv d shape	
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	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 coordinator:
	Prof. DrIng. Peter Reinold
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

IVIE	asuring Te	echnology							MT	
lden num	tification ber:	Workload:	Credits:	Stud	y semes		Frequenc offer	y of the	Duratio	on:
1168	3	150 h	5	3rd	sem.		Annual (Winter)		1 sem	
1	Course:	1	Planned gro	up sizes	Scop	e	Actual o time / c teaching	lassroom	Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		or seminar	15 students		1	weekly hours	10	h	22.5	h
2		ed self-study	ompetences:		0	weekly hours	0	h	0	h
	or sens determ precaut	ors; select ine measur tions to rec	structure of m the measurir ing uncertain luce them; ba sing measured	ng metho ties; dete sic princi	ds suit rmine	able for cossible	the resp disturb	bective c ance vari	conditions ables an	s of use d selec
	errors, r digital s frequer measur	measureme signals, ger ncy measur rement, forc	rement, SI unit ent uncertainti- eral aspects for ement, curren- ce, torque, ten r processing m	es, disturk or the sele t, voltage nperature	ection a and po and po	variables and use o ower mea	and the of mease asureme	ir reduct uring tran ent, length	ion, analc Isducers, ⁻ n, angle a	ogue and time and nd strair
4	Forms of	teaching:	i prococonigri		and co.					
		, sem. lesso	ons with exerci	ses and p	rojectt	asks, pra	actical co	ourse		
5	Participa Formal:	tion requiren	nents: DNC	ses and p	rojectt	asks, pra	actical co	burse		
-	Participa Formal: Content: Forms of	tion requiren	nents: ne ne						oralexan	nination
6	Participa Formal: Content: Forms of Written Prerequis	tion requiren Nc Nc assessment examinatic site for the a	nents: ne ne	n examina pints:	tion, pe	erforman			oralexan	nination
6 7	Participa Formal: Content: Forms of Written Prerequis Module Application Biotech Enginee	tion requiren No assessments examinatic site for the a examinatic on of the mo nology and ering (B.Sc.	nents: ne n, combination ward of credit po pn pass and co on pass and co dule (in the follo l Instrumentation)	n examina bints: urse asse wing study on Engine	tion, pe ssmen program	erform <i>a</i> nd t mmes)	ceexam	ination or		
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7 8 9	Participa Formal: Content: Forms of Written Prerequis Module Biotech Enginee Importan accordi Module of Prof. Dr	tion requiren No assessment: examinatic site for the are examinatic on of the mo anology and ering (B.Sc. are of the gra ing to BRPC coordinator: . Dr. Andrea formation: are will be ar	nents: one on, combination ward of credit po on pass and co odule (in the follo dule (in the follo l Instrumentation) ade for the final ()	n examina bints: wing study on Engine grade:	tion, pe ssmen program ering (E	erformand t mmes) 3.Sc.), Me	ce exam echatron	ination or		

VIIC	rocontro	ollers							MC	
	tification ber:	Workload:	Credits:	Study	/ semes		Frequency	of the	Durati	on:
1173		150	5	Fifth	semeste		offer: Annual		1 sem.	
						((Winter)			
1	Course:		Planned group	sizes:	Scop	ie:	Actual c time/clas teaching	ssroom	Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise)	20 students		0	weekly hours	0	h	0	h
	Practical	l or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	the help	of modern deve	elopment enviror	nments.						
3	Contents		on of type familie	25						
3	Overview Structure Comman Introduc Program	w and comparis e and mode of o nd set and on-o tion to machine ming in C.	on of type familie operation of a mi- chip peripherals, o a language and as ccurring tasks in	crocontr connecti ssembler	on of e [.] s.	xternal pe	ripherals.			oller.
	Overview Structure Comman Introduc Program Solution	w and comparis e and mode of o nd set and on-o tion to machine ming in C.	operation of a michip peripherals, of a michip peripherals, of a language and as	crocontr connecti ssembler	on of e [.] s.	xternal pe	ripherals.			oller.
	Overview Structure Comman Introduc Program Solution Forms of Lecture	w and comparis e and mode of on nd set and on-or tion to machine iming in C. of frequently o f teaching: in seminar style	operation of a mic chip peripherals, o language and a ccurring tasks in with blackboard	crocontr connecti ssembler consider	on of e. . ⁻ s. ation o	ternal pe	ripherals. nical and e	economic	aspects.	
4	Overview Structure Comman Introduc Program Solution Forms of Lecture course in	w and comparis e and mode of o nd set and on-o tion to machine iming in C. of frequently o	operation of a michip peripherals, of a michip peripherals, of a language and as ccurring tasks in with blackboard	crocontr connecti ssembler consider	on of e. . ⁻ s. ation o	ternal pe	ripherals. nical and e	economic	aspects.	
4	Overview Structure Comman Introduc Program Solution Forms of Lecture course in	w and comparis e and mode of e nd set and on-o tion to machine ming in C. of frequently o f teaching: in seminar style n the laboratory	operation of a michip peripherals, of a michip peripherals, of a language and as ccurring tasks in with blackboard	crocontr connecti ssembler consider	on of e. . ⁻ s. ation o	ternal pe	ripherals. nical and e	economic	aspects.	
4	Overview Structure Comman Introduc Program Solution Forms of Lecture course in Participa	w and comparis e and mode of on the set and on-or tion to machine iming in C. of frequently of f teaching: in seminar style the laboratory tion requireme Modu 1070 have Modu 1045 1070	e language and a ccurring tasks in with blackboard	crocontr connecti ssembler consider writing a onics I a ctronics s II; s I;	on of e s. ation o and proj nd II (En (Electric	f the technic	ripherals. nical and ecompany Compute	economic ing semir r Science	aspects. har. Practic	al
4	Overview Structure Comman Introduc Program Solution Forms of Lecture course in Participa Formal: Content:	w and comparis e and mode of on the set and on-or tion to machine iming in C. of frequently of f teaching: in seminar style the laboratory tion requireme Modu 1070 have Modu 1045 1070	bperation of a michip peripherals, of a michip peripherals, of a language and as a courring tasks in with blackboard with blackboard with blackboard been completed. Ides: Digital Electronic Digital Electronic Digital Electronic been completed.	crocontr connecti ssembler consider writing a onics I a ctronics s II; s I;	on of e s. ation o and proj nd II (En (Electric	f the technic	ripherals. nical and ecompany Compute	economic ing semir r Science	aspects. har. Practic	al
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4 5 7 8	Overview Structure Comman Introduc Program Solution Forms of Lecture course in Participa Formal: Content: Formal Formal Content: Vritten of Prerequi Module Applicati Electrica	w and comparis e and mode of on the set and on-or- tion to machine iming in C. of frequently of f teaching: in seminar style in the laboratory tion requireme Modu 1070 have Modu 1045 1070 1325 assessment: or oral examination site for the awa examination pa on of the modu il Engineering E	been completed. les: Digital Electronic Digital Electronic Electrical Enginee Electrical Electronic	crocontr connecti ssembler consider writing a onics I a ctronics s I; s I; ering Ba e with pre s: ry exami g study eering Co	on of e s. ation o and proj nd II (En (Electric sics sics sics sics nation program	f the techr jection, ac gineering al Engineer y examina	ripherals. hical and e ccompany Compute ering stuc tion perfo	ing semir r Science ly program	aspects. har. Practic	al
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3 4 5 6 7 8 9 10	Overview Structure Comman Introduc Program Solution Forms of Lecture course in Participa Formal: Content: Content: Form of Written of Prerequi Module Applicati Electrica	w and comparis e and mode of on the set and on-or- tion to machine iming in C. of frequently of f teaching: in seminar style in the laboratory tion requireme Modu 1070 have Modu 1045 1070 1325 assessment: or oral examination site for the awa examination pa on of the modu il Engineering E	been completed. les: Digital Electronic Digital Electronic Electrical Enginee Electrical Electronic	crocontr connecti ssembler consider writing a onics I a ctronics s I; s I; ering Ba e with pre s: ry exami g study eering Co	on of e s. ation o and proj nd II (En (Electric sics sics sics sics nation program	f the techr jection, ac gineering al Engineer y examina	ripherals. hical and e ccompany Compute ering stuc tion perfo	ing semir r Science ly program	aspects. har. Practic	al

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

	work Tech	inology							NW	
Ident numl	tification	Workload:	Credits:	Study	/ semes		Frequenc offer	y of the	Duration	n:
1181		150 h	5	3rd o	or 5th s	sem.	Annual (Winter)		1 sem.	
1	Course:		Planned group	sizes	Scop	e	Actual of time / cl teaching	assroom	Self-stud	У
	Lecture		60 students		2	weekly hours		h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	- S - TI	CP/IP model. tudents are fa	ssign the proce They can detec amiliar with the r ame possibilitie	ctand e role of a	liminat switch	teconfig	uratione	errors in a	LAN.	Э
		ackers).		es to pro	otect a	LAN fro	m non-a	uthorised	lattacks (e	.g.
3	Contents - A - V - Lo - S - P - For - C - A - S Forms of	rchitecture ar ledia for data ocal networks ubnet formati rotocols of da unction of imp configuration ev imulation and teaching:	nd application of transmission, and their chara on also with var ta transmission portant network of active compo rel services and Ipractical const	of comp acterist riable su n in netv coupli coupli protoc truction	outer-a ics, ubnet l vorks (r ng dev for sett ols, of cor	ided cor engths (network a rices (esp ing up n nputer n	mmunica /LSM), and trans becially re etworks, etworks.	tion syste sport laye outer, swi	ems, er), itch),	.g.
	Contents - A - V - Lo - S - P - Forms of Lecture	rchitecture ar ledia for data ocal networks ubnet formati rotocols of da unction of imp configuration pplication lev imulation and teaching:	nd application of transmission, and their chara ion also with var ita transmission portant network of active compo rel services and Ipractical const s, project and g	of comp acterist riable su n in netv coupli coupli protoc truction	outer-a ics, ubnet l vorks (r ng dev for sett ols, of cor	ided cor engths (network a rices (esp ing up n nputer n	mmunica /LSM), and trans becially re etworks, etworks.	tion syste sport laye outer, swi	ems, er), itch),	.g.
4	Contents - A - V - La - S - P - Fu - C - A - S Forms of Lecture Participa Formal: Content:	rchitecture ar ledia for data ocal networks ubnet formati rotocols of da unction of imp configuration ev imulation and teaching: a, sem. lessons tion requirement None	nd application of transmission, and their chara ion also with var ta transmission portant network of active compo rel services and practical const s, project and g	of comp acterist riable su n in netv coupli coupli protoc truction	outer-a ics, ubnet l vorks (r ng dev for sett ols, of cor	ided cor engths (network a rices (esp ing up n nputer n	mmunica /LSM), and trans becially re etworks, etworks.	tion syste sport laye outer, swi	ems, er), itch),	.g.
4 5 6	Contents - A - V - L - S - P - F - C - A - S Forms of Lecture Participa Formal: Content: Forms of Written examin	rchitecture ar ledia for data ocal networks ubnet formati rotocols of da unction of imp configuration ev imulation and teaching: a sem. lessons tion requirement None assessment: examination, ation perform	nd application of transmission, and their chara- ion also with var ita transmission portant network of active compo- rel services and practical const s, project and g nts: e combination ex ance	of comp acterist riable su n n netv coupli onents fprotoc truction roup we kaminat	outer-a ics, Jonet I vorks (r ng dev for sett ols, of cor	aided cor engths (network a rices (esp nputer n nputer n	mmunica /LSM), and trans becially re etworks, etworks.	tion syste sport laye outer, swi	ems, er), itch), ternship	
4	Contents - A - V - L - S - P - F - C - A - S Forms of Lecture Participa Formal: Content: Forms of Written examin Prerequis Module	rchitecture ar ledia for data ocal networks ubnet formati rotocols of da unction of imp configuration ev imulation and teaching: a, sem. lessons tion requirement None assessment: examination, ation perform site for the awa examination	nd application of transmission, and their chara- ion also with var ita transmission portant network of active compo- rel services and practical const s, project and g nts:	of comp acterist riable su in netv coupli conents lprotoc truction roup we kaminat	outer-a ics, ubnet l vorks (r ng dev for sett ols, of cor ork with ion or o	aided cor engths (network a rices (esp ing up n nputer n nin the fr oral exar	mmunica /LSM), and trans becially re etworks, etworks.	tion syste sport laye outer, swi	ems, er), itch), ternship	

9	Importance of the grade for the final grade: according to BRPO Module coordinator:
10	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	onics								РНО	
Identi	fication	Workload:	Credits:	Study	y semes		Frequency	of the	Duratio	on:
numb 1309		150 h	5	4th c	or 6th s	em.	^{offer} Annual (Summer)	1 sem	
1	Course:	I	Planned group	sizes	Scop	e	Actual c time / cla teaching	assroom	Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		1	weekly hours	15	h	30	h
	Practical	or seminar	15 students		1	weekly hours	15	h	15	h
		ed self-study outcomes/con	60 students		0	weekly hours	0	h	0	h
3	Name th and dev generat in applic	ne most impo velopments c ing and light- cation areas c		applica onics. Na conents	ition. G aming, s.Enab	irasp the interpre lethe de	ting and o evelopment	designing nt of inde	g interact	ing light- solutions
	laws and optics, v optical	d standards. wave optics, beam paths	nd current dev Spectral eye s photometry, la , handling of gy, material pro	ensitivi aser eff optical	ty and ect, ho labora	photomo plograph atory sy	etric radia ny and inf vstems. A	ation equ terferome applicatio	ivalent, g etry, simu ons in m	jeometric ulation of
4		teaching:	d practical cou	re0						
5		ion requireme								
6	Forms of Written Project	work or oral e			tion, Pe	erformar	nce exami	ination,		
7	-		rd of credit point pass and cours		ssmen	t				
8	Application Biotech	on of the modu nology and Ir	ile (in the followin Instrumentation	g study Engine	program	nmes)	d Mechat	ronics (B	.Sc.)	
9	accordi	ngtoBRPO	e for the final grad	de:						
10	Prof. Dr.	coordinator: -Ing. Reinhai	dKaschuba							
11	collectio	ırse material i	s summarised i and a collection. Ir.			-				-

12	Language:
	German

Phy	sics								PHY	
lden num	tification	Workload:	Credits:	Stud	y seme:		Frequenc offer	y of the	Durati	on:
1319		150 h	5	2nd	sem.		Annual (Summe	er)	1 sem	1.
1	Course:	I	Planned group	sizes	Scop)e	Actual o time / c teachin	lassroom	Self-stu	ıdy
	Lecture		60 students		2	weekly hours		h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	30	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	15	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
						itsto veri	.,			
3	differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics	nics (kinematint forces, work nechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmor (geometric: re	cs: one and th , energy, powe vdrostatics: pro minar and turb mperature, hea hase transition s (free damped ic waves, Dopp effection, refrac ve, sound level	aree-dir er, mom essure, ulent flo at, therr as). l and un pler effe	nensio entum. buoya w, frict mal ex dampe ect, inte	nal trans ancy; hy tion). pansion, ed vibratio erference ave optic	slation; d drodyna gas law ons, forc e, diffract	ynamics: amics: cc s, interna ed vibrat ion). erence, d	ontinuity al energy ions, supe	equatior , entropy erpositio
4	Mechar differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics Acousti	hics (kinematint forces, work hechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmon (geometric: re ics (sound wa	, energy, powe drostatics: pro minar and turb mperature, hea hase transition s (free damped ic waves, Dopp effection, refrac ve, sound level	aree-dir er, mom essure, ulent flc at, therr as). land un pler effe tion, ler l, sound	nensio entum. buoya w, frict nal ex dampe ect, inte ses; w spect	nal trans ancy; hy tion). pansion, ed vibration erference ave option ra, sounc	slation; d drodyna gas law ons, forc e, diffract cs: interfe lpropag	ynamics: co amics: co s, interna ed vibrat ion). erence, d ation).	ontinuity al energy ions, supe	equatior , entropy erpositio
4	Mechar differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics Acousti Forms of Lecture Participat Formal: Content:	hics (kinematint forces, work hechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmon (geometric: re ics (sound wa teaching: a sem. lesson tion requirement assessment:	, energy, power drostatics: pro- minar and turb mperature, hea hase transition s (free damped ic waves, Dopp effection, refrac ve, sound level	aree-dir er, mom essure, ulent flo at, therr is). land un pler effe tion, ler l, sound s and p	nensio entum. buoya w, frict nal ex dampe ect, inte ses; w spect	nal trans ancy; hy tion). pansion, ed vibration erference ave option ra, sounc	slation; d drodyna gas law ons, forc e, diffract cs: interfe lpropag	ynamics: co amics: co s, interna ed vibrat ion). erence, d ation).	ontinuity al energy ions, supe	equatior , entropy erpositio
4 5 6	Mechar differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics Acousti Forms of Lecture Participat Formal: Content: Forms of Written	hics (kinematint forces, work hechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmon (geometric: re ics (sound wa tion requireme assessment: examination site for the awa	c, energy, power vdrostatics: pro- minar and turb mperature, hea hase transition is (free damped ic waves, Dopp effection, refrac- ve, sound level s with exercises <u>hts:</u>	aree-dir er, mom essure, ulent flc at, therr is). land un pler effe tion, ler l, sound s and p s and p	nensio entum. buoya ww, frich nal ex dampe ect, inten ses; w spect	nal trans ancy; hy tion). pansion, ed vibration erference ave option ra, sounce asks, pra	slation; d drodyna gas law ons, forc e, diffract cs: interfe lpropag	ynamics: co amics: co s, interna ed vibrat ion). erence, d ation).	ontinuity al energy ions, supe	equatior , entropy erpositio
4 5 6 7	Mechar differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics Acousti Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module	hics (kinematint forces, work hechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmon (geometric: re ics (sound wa iteaching: a sem. lesson ition requireme assessment: examination on of the modu	c, energy, power vdrostatics: pro- minar and turb mperature, hea hase transition ic waves, Dopp offlection, refrac- ve, sound level s with exercises <u>hts:</u>	ation	nensio entum. buoya w, frict nal ex dampe ect, inten ses; w spect spect	nal trans ancy; hy tion). pansion, ed vibratio erference ave optio ra, sounc asks, pra	elation; d drodyna gas law ons, force e, diffract cs: interfe lpropag	ynamics: amics: co rs, interna ed vibrat ion). erence, d ation).	ontinuity of al energy ions, supe iffraction)	equatior , entropy erpositio
3 4 5 7 8 9	Mechar differen Fluid m Bernoul Thermo circular Vibratic of vibra Optics Acousti Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Biotech	hics (kinematint forces, work hechanics (hy lli equation, la odynamics (te processes, p ons and waves tions, harmor (geometric: re ics (sound wa iteaching: a sem. lesson ition requirement assessment: examination on of the modu unology and Ir	c, energy, power vdrostatics: pro- minar and turb mperature, hea hase transition ic waves, Dopp offlection, refrac- ve, sound level s with exercises hts:	aree-dir er, mom essure, ulent flo at, therr is). land un pler effe stion, ler l, sound s and p s and p s and p s and p s and p s and p	nensio entum. buoya w, frict nal ex dampe ect, inten ses; w spect spect	nal trans ancy; hy tion). pansion, ed vibratio erference ave optio ra, sounc asks, pra	elation; d drodyna gas law ons, force e, diffract cs: interfe lpropag	ynamics: amics: co rs, interna ed vibrat ion). erence, d ation).	ontinuity of al energy ions, supe iffraction)	equatior , entropy erpositio

 11
 Other information:

 12
 Language: German

	ctical Proj	ect/Internshi	ip						PRA	
Iden [:] num	tification ber:	Workload:	Credits:	Stud	y semes		Frequenc offer	-	Duratio)n:
129:	2	450 h	15	7ths	sem.		Eachser	nester	12 wee	əks
1	Course:		Planned group	sizes	Scop)e	Actual o time / c teaching	lassroom	Self-stud	dy
	Lecture		60 students		0	weekly hours	0	h	450	h
	Sem. les	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		or seminar	15 students		0	weekly hours	0	h	0	h
	-	ed self-study	60 students		0	weekly hours	0	h	0	h
3	expand Contents	-	analysis and pro	oblems	olving,	presenta	ation and	I commur	nication sk	kills.
	and sho		rom the field o	of activity	hv of th	o roopor	stivo cho	oon oom		
		epare an acti [.] ts should rece	in engineering vity report and eive individual	task. At the stu	the en dents a	d of the v a final rej	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
4	student lecture	epare an acti ts should rece rs. f teaching:	vity report and eive individual	task. At the stu and pro	the end dents a ofessio	d of the v a final re mal advis	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
4	student lecture Forms of Sem. le Participa	epare an actives should reconnected rs. f teaching: ssons with extion requireme	vity report and eive individual ercises as acco nts:	task. At the stu and pro	the end dents a ofessio	d of the v a final re mal advis	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
5	Student lecturer Forms of Sem. le Participa Formal: Content:	epare an actives should receives should receives rs.	vity report and eive individual ercises as acco nts: e	task. At the stu and pro	the end dents a ofessio	d of the v a final re mal advis	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
5	Student lectured Forms of Sem. le Participa Formal: Content: Forms of Term pa	epare an active ts should rece rs. f teaching: ssons with ex tion requireme None f assessment: aper	vity report and eive individual ercises as acco nts: e	task. At the stu and pro	the end dents a ofessio	d of the v a final re mal advis	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
5	Student lectured Forms of Sem. le Participa Formal: Content: Forms of Term pa Prerequis Module	epare an active ts should rece rs. f teaching: ssons with ex tion requireme None f assessment: aper site for the awa examination	vity report and eive individual ercises as acco nts: e e e ard of credit point pass	task. At the stu and pro ompany	ving gu	d of the v a final rep anal advis	vork tern port. Dur	n, the sup ing the pr	ervising c ractical pl	company hase, the
5 6 7	student lecturer Forms of Sem. le Participa Formal: Content: Forms of Term pa Prerequis Module Applicatio Electric Enginee	epare an activits should records. f teaching: ssons with ex- tion requireme None f assessment: aper site for the aware examination on of the modu- cal Engineeri ering (B.Eng. ering (B.Sc.)	vity report and eive individual ercises as acco nts: e ard of credit point pass ule (in the followin ng (B.Eng.), E), Mechatronic	task. At the stu and pro ompany company cs study Enginee cs (B.So	ving gu	d of the v a final re onal advis idance idance Compute	vork tern port. Dur sing fron	n, the sup ing the pr n the sup ces (B.E	ervising c ractical ph ervising u ng.), Me	chanica
5 6 7 8	student lecturer Forms of Sem. le Participa Formal: Content: Forms of Term pa Prerequi Module Application Electrico Enginee Importar	epare an activits should records. f teaching: ssons with ex- tion requireme None f assessment: aper site for the aware examination on of the modu- cal Engineeri ering (B.Eng. ering (B.Sc.)	vity report and eive individual ercises as acco nts: e e ard of credit point pass ule (in the followin ng (B.Eng.), E	task. At the stu and pro ompany company cs study Enginee cs (B.So	ving gu	d of the v a final re onal advis idance idance Compute	vork tern port. Dur sing fron	n, the sup ing the pr n the sup ces (B.E	ervising c ractical ph ervising u ng.), Me	chanica
5	student lecturer Forms of Sem. le Participa Formal: Content: Forms of Term pa Prerequis Module Applicatio Electric Enginee Importar accord	epare an active ts should rece rs. f teaching: ssons with ex tion requireme None f assessment: aper site for the awa e examination on of the modu cal Engineeri ering (B.Eng. ering (B.Sc.) nee of the grade	vity report and eive individual ercises as acco nts: e ard of credit point pass ule (in the followin ng (B.Eng.), E), Mechatronic	task. At the stu and pro ompany company cs study Enginee cs (B.So	ving gu	d of the v a final re onal advis idance idance Compute	vork tern port. Dur sing fron	n, the sup ing the pr n the sup ces (B.E	ervising c ractical ph ervising u ng.), Me	chanica
5 6 7 8 9	student lecturer Forms of Sem. le Participa Formal: Content: Forms of Term pa Prerequis Module Applicatio Electric Enginee Importar accord N.N.	epare an active ts should rece rs. f teaching: ssons with ex tion requireme None f assessment: aper site for the awa examination on of the modu cal Engineeri ering (B.Eng. ering (B.Sc.) nee of the grade ing to BRPO	vity report and eive individual ercises as acco nts: e ard of credit point pass ule (in the followin ng (B.Eng.), E), Mechatronic	task. At the stu and pro ompany company cs study Enginee cs (B.So	ving gu	d of the v a final re onal advis idance idance Compute	vork tern port. Dur sing fron	n, the sup ing the pr n the sup ces (B.E	ervising c ractical ph ervising u ng.), Me	chanica

	duct and l	Price Manage	ement						PPM	
	ntification Noer:	Workload:	Credits:	Stuc	ly seme		Frequenc offer	y of the	Duratio	n:
120		150 h	5	5th	sem.		Annual		1 sem	
120	0	10011	U	our	00111.		(Winter)		1 30111	
							(Winter)			
1	Course:		Planned group	sizes	Scop	e		contact	Self-stud	dy
								lassroom		
	Leetune		CO atualanta		3		teachin 45	g h	67.5	
	Lecture		60 students		3	weekly hours	40	n	07.5	h
	Sem. les	sons	30 students		1	weekly	15	h	22.5	h
	06111.163	30113	SO SIGGENIS		1'	hours	15		22.0	
	Exercise		20 students		0	weekly	0	h	0	h
	EXCICIC		20 0000000		Ū	hours	U U			
	Practical	or seminar	15 students		0	weekly	0	h	0	h
					Ŭ	hours	Ũ		Ŭ	
	Supervis	ed self-study	60 students		0	weekly	0	h	0	h
		-			_	hours	-			
2	Learning	outcomes/co	mpetences:							
	Studen	ts have basic	cknowledge of t	the tool	sofop	erational	marketi	ng and ca	an classif∖	them a
			ation tools of str					-		
		•	ramme, produc	-			-	-		
	-		•			-			•	
			understandthe				•			
	and ca	n apply ther	m in a targeted	d mann	er. Stu	dents ac	quire th	le compe	etence to	develop
	concep	ots for the ma	arketing of prod	lucts th	roughc	out their e	entire life	e cycle an	d to evalu	late the
	practic	ality.								
	-									
3	Contents	8:								
	~									
	• Ov	erview of the	instruments of	operati	ional m	arketing				
			instruments of	operati	ional m	arketing				
	• Pro	gramme pol		operati	onal m	arketing				
	Pro Pro Pro	ogramme pol oduct policy	icy	operati	ional m	arketing				
	 Pro Pro Co 	ogramme pol oduct policy ntracting po	icy licy	·	ional m	arketing				
	 Pro Pro Co Bas 	ogramme pol oduct policy ntracting po sic concepts	icy	·	ional m	arketing				
4	Prc Prc Prc Co Bas Forms of	ogramme pol oduct policy ntracting po sic concepts f teaching:	icy licy of distribution p	·	ional m	arketing				
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	Prc Prc Prc Co Bas Forms of Lecture Participa	ogramme pol oduct policy ntracting po sic concepts teaching: o, sem. lessor tion requirement	icy licy of distribution p ns ents:	·	onal m	arketing				
4	 Pro Pro Co Bas Forms of Lecture Participa Formal: 	ogramme pol oduct policy ntracting po sic concepts i teaching: a, sem. lessor	icy licy of distribution p ns ents:	·	ional m	arketing				
	Pro Pro Pro Pro Co Bas Forms of Lecture Participa Formal: Content:	ogramme pol oduct policy ntracting po sic concepts f teaching: e, sem. lessor tion requirement Non	icy licy of distribution p ns ents:	·	ional m	arketing				
5	 Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of 	ogramme pol oduct policy ntracting po sic concepts teaching: a, sem. lessor tion requirement Non	icy of distribution p ns ents: ie	oolicy						
5	 Pro Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written 	ogramme pol oduct policy ntracting po sic concepts teaching: e, sem. lessor tion requirement Non	icy of distribution p ns ents: re	oolicy			ceexam	ination or	oralexan	nination
5	 Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written Prerequi 	ogramme pol oduct policy ntracting po sic concepts teaching: a, sem. lessor tion requireme Non fassessment: examination site for the away	icy of distribution p ns ents: e , combination e ard of credit point	oolicy			ceexam	ination or	oralexan	nination
5 6 7	 Pro Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written Prerequi Module 	ogramme pol oduct policy ntracting po sic concepts teaching: a, sem. lessor tion requireme Non assessment: examination site for the away	icy of distribution p ns ents: e <u>, combination e</u> ard of credit point n pass	oolicy examina ts:	tion, pe	erforman	ceexam	ination or	oralexan	nination
5 6 7	 Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written Prerequi Module Applicati 	ogramme pol oduct policy ntracting po sic concepts teaching: a, sem. lessor tion requirement non requirement site for the away examination on of the mod	icy of distribution p ns ents: le l, combination e ard of credit point n pass ule (in the followir	policy examinates:	tion, pe	erform and				nination
5 6 7	 Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written Prerequi Module Applicati 	ogramme pol oduct policy ntracting po sic concepts teaching: a, sem. lessor tion requirement non requirement site for the away examination on of the mod	icy of distribution p ns ents: e <u>, combination e</u> ard of credit point n pass	policy examinates:	tion, pe	erform and				nination
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5 6 7 8	 Pro Pro Co Bas Forms of Lecture Participa Formal: Content: Forms of Written Prerequi Module Applicati Mechat 	ogramme pol oduct policy ntracting po sic concepts teaching: e, sem. lessor tion requireme Non f assessment: examination site for the awa examination on of the mod tronics (B.Sc.	icy of distribution p ns ents: le l, combination e ard of credit point n pass ule (in the followir	examina ts: ng study nergies	tion, pe	erform and				nination
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Proc	duction PI	anning							PRP	
Ident numl	tification	Workload:	Credits:	Stud	y semes		Frequency offer	y of the	Durati	on:
1212		150 h	5	4th o	or 6th s	em.	Annual (Summe	r)	1 sem	Ι.
1	Course:	1	Planned group	sizes	Scop	e	Actual c time / cl teaching	assroom	Self-stu	ıdy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		2	weekly hours	30	h	45	h
	Exercise		20 students		0	weekly hours	0	h	0	h
		or seminar	15 students		0	weekly hours	0	h	0	h
2		ed self-study	60 students		0	weekly hours	0	h	0	h
	assess	their impact c	n holistic busir	iess pro		s betwee	en supplie	ers and cu	ustomers	i.
3	The stu able to regard to Contents	dents unders evaluate the i to its effects c	on holistic busir stand the proce nformation exc on other plannir	edures change ng step	in the s d betw s.	sub-proc reen the s	cesses of sub-proc	product cesses an	planning	g and a
3	The stu able to regard to - C - C - C - C - M - M - Ty - In m - N - N - S - C - N - S - C - N - S - C	dents unders evaluate the i to its effects of perational ta connection be roduct design larket require ypical EDP ap formation flo nanagement: rogramme pla laterial requir cheduling an Order process lapping a Kar hipping prep	tand the proce	edures change ng step: of produ- oment a oduction uction p ed data r, parts l nary ne ng with l uncing ction ord stem / and in	in the s d betw s. uction nd the on oroces port pr a struct ists, wc eds as: 3OM e: der ma	sub-proc een the s olanning producti ses and t oduction ures in th orkplace sessmen xplosion nagemen	and con ion proce their cont planning to IT syste master, r t, and net r	trol esses to b trol gand cor ems (mas outings)	planning id to asse e planne htrol ster data	g and a ess it wit
3	The stu able to regard to - C - C - C - C - N - N - In m - N - N - S - C - N - S - C - N - S - C - N - S - C	dents unders evaluate the i to its effects of perational ta connection be roduct design larket require ypical EDP ap formation flo nanagement: rogramme pla laterial requir cheduling an Order process lapping a Kar hipping prep	stand the proce nformation exc on other plannin sks in the area of tween develop n suitable for pr ments for prod oplication areas w and associat material master anning and prin ements plannin d capacity bala ing and produc nban control sy aration, delivery	edures change ng step: of produ- oment a oduction uction p ed data r, parts l nary ne ng with l uncing ction ord stem / and in	in the s d betw s. uction nd the on oroces port pr a struct ists, wc eds as: 3OM e: der ma	sub-proc een the s olanning producti ses and t oduction ures in th orkplace sessmen xplosion nagemen	and con ion proce their cont planning to IT syste master, r t, and net r	trol esses to b trol gand cor ems (mas outings)	planning id to asse e planne htrol ster data	g and ar ess it wit
4	The stu able to regard to - C - C - C - C - N - N - In m - N - N - N - S - C - N - S - C - N - S - C - S - C - C - S - C - C - C - C - C - C - C - C - C - C	dents unders evaluate the i to its effects of perational ta connection be roduct design larket require ypical EDP ap formation flo nanagement: rogramme pla laterial requir cheduling an order process lapping a Kar hipping prep computer-aid teaching: and exercise tion requirement None	stand the proce nformation exc on other plannir sks in the area of tween develop n suitable for pro- ments for prod oplication areas w and associat material master anning and production ing and production aration, delivery ed production	edures change ng step: of produ- oment a oduction uction p ed data , partsl nary ne ng with f ancing ction ord stem / and in olannin	in the s d betw s. uction nd the on oroces port pr a struct ists, wc eds as: 3OM e: der ma voicing g and c	sub-proc een the s planning producti ses and t oduction ures in th orkplace sessmen xplosion nagemen	and con ion proce their cont planning to IT syste master, r t, and net r nt, g	r product esses an trol esses to b trol gand cor ems (mas outings) requireme	planning id to asse e planne atrol ater data ents plan	g and a ess it wit ed: ning
4	The stu able to regard to - C - C - C - N - N - N - N - N - N - N - N - S - C - S - S - S - S - S - S - S - S - S - S	dents unders evaluate the i to its effects of perational ta connection be roduct design larket require ypical EDP ap formation flo nanagement: rogramme pla laterial requir cheduling an order process lapping a Kar hipping prep- computer-aid teaching: and exercise tion requireme None Basic infor	stand the proce nformation exc on other plannin sks in the area of tween develop n suitable for pr ments for prod oplication areas w and associat material master anning and prin ements plannin d capacity bala ing and production ban control sy aration, delivery ed production	edures change ng step: of produ- oment a oduction uction g ed data , partsl nary ne ng with R incing ction ord stem / and in olannin	in the s d betw s. uction nd the pr port pr a struct ists, wc eds as: 3OM e: der ma voicing g and c	sub-proc een the s olanning producti ses and t oduction ures in th orkplace sessmen xplosion nagemen controllin	and cont ion proce their cont planning master, r t, and net r nt, g	trol esses to b trol gand cor ems(mas outings) requirement basic know	planning id to asse he planne htrol ter data ents plan	g and ar ess it wit ed: ning
	The stu able to regard to - C - C - C - C - N - N - In m - N - N - N - S - C - N - S - C - N - S - C - S - S - C - S - S - S - S - S - S - S - S - S - S	dents unders evaluate the i to its effects of perational ta connection be roduct design larket require ypical EDP ap formation flo nanagement: rogramme pla laterial require cheduling an order process lapping a Kar hipping prep- computer-aid teaching: and exercise tion requireme None assessment: apper, written e	stand the proce nformation exc on other plannin sks in the area of tween develop n suitable for pr ments for prod oplication areas w and associat material master anning and product ing and p	edures change ng step of produ- oment a oductio uction g ed data , partsl nary ne ng with f ancing ction ord stem / and in olannin manuf ogy mbinat	in the s d betw s. uction nd the pr port pr a struct ists, wc eds as: 3OM e: der ma voicing g and c	sub-proc een the s olanning producti ses and t oduction ures in th orkplace sessmen xplosion nagemen controllin	and cont ion proce their cont planning master, r t, and net r nt, g	trol esses to b trol gand cor ems(mas outings) requirement basic know	planning id to asse he planne htrol ter data ents plan	g and a ess it wit ed: ning

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

100	duction E	ngineering							PRT	
	tification ber:	Workload:	Credits:	Study	y semes		Frequency offer	of the	Durati	on:
1214		150 h	5	3rd o	or 5th s	sem.	Annual (Winter)		1 sem	l.
1	Course:		Planned group	sizes	Scop	e	Actual co time / cla teaching		Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		2	weekly hours	30	h	45	h
	Exercise)	20 students		0	weekly hours	0	h	0	h
	Practica	l or seminar	15 students		0	weekly hours	0	h	0	h
	Supervis	sed self-study	60 students		0	weekly hours	0	h	0	h
	- h	lisadvantages ave the ability	s. / to select suitał	olemar	u foctu		ſ			
	- a c n - k	reable to dete competently a nanufacturing now the esser	espective proce ermine process nd, with the help processes with ntial basics in th economic and	esses. -speci o of the pregarc ne field	fic cha results d to the of asse	racteristi s obtaine eir advan embly teo	ic values, t ed, to asse tages anc chnology a	to evalua ss the va I disadva and are a	ate these arious antages. able to ev	valuate
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3 4 5	 - a - a - k - k a - k - k	reable to dete competently a nanufacturing now the esser nd assess the concepts. s: duction to provide tion moulding ering and powd tion moulding ering and liquid tive manufact and sheet me ng hining with ge asion ating ating of plastic al-plastic con embly techno f teaching: e, sem. lesson	ermine process nd, with the help processes with natial basics in the economic and duction engines for metallurgy gand extrusion of d-state sintering ometrically defi ometrically defi ometrically und cs nposites blogy	esses. -speci o of the nregard e field organi ering of plast g of pla s	fic cha results d to the of asse sationa ics stics stics	racteristi s obtaine ir advan embly teo al framev	ic values, t ed, to asse tages anc chnology a	to evalua ss the va I disadva and are a	ate these arious antages. able to ev	valuate

6	Written examination, combination examination or oral examination
7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Mechanical Engineering (B.Eng.) and Mechatronics (B.Sc.)
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. DrIng. Magnus Horstmann
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Proj	ect 3 with	DesignAspe	ects						PR3	
lden num	tification ber:	Workload:	Credits:	Stud	y semes		Frequenc offer	y of the	Durati	on:
1224	4	150 h	5	3rd s	sem.		Annual (Winter)		1 sem	1.
1	Course:		Planned group	o sizes	Scop	e	Actual o time / c teachin	lassroom	Self-stu	ıdy
	Lecture		60 students		0	weekly hours	0	h	0	h
	Sem. les	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		2	weekly hours	30	h	120	h
2		ed self-study outcomes/co	60 students		0	weekly hours	0	h	0	h
	shown.	The students	vidual particip s continuously	ants are docume	identif ent pro	ied, divic ject step	led up ai		errelatior	nships are
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3	shown. for deci They co Contents Structu in produ present	The students ision-making ompile the pr s: ring of tasks uct developr	vidual particip s continuously , evaluate and oject result and n mechatronic nent and proje ques, technica	ants are docume make de ddraw a produc ect work.	identif ent pro ecision critica t devel Targe	ied, divic ject step s. Iconclus opment. t-oriente	led up an as and re sion. Optimisa	nd the inte sults. The ation of ta ct manage	errelation ey develo sks and v ement teo	nships ar op a basi workflow chniques
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4 5 6	shown. for deci They co Contents Structu in produ present applica Forms of Project Participa Formal: Content: Forms of Term pa work, or Prerequis	The students ision-making ompile the pr s: ring of tasks i uct developr tation techni ation of study f teaching: tion requireme Non f assessment: aper, written ral examination	vidual particip s continuously oject result and oject result and n mechatronic nent and proje ques, technica basics.	ants are docume make de ddraw a produc ect work. al comm ombinat <u>ion durir</u>	identif ent pro ecision: critica t devel Targe nunicati	ied, divic ject step s. Iconclus opment. t-oriente ion and ion and	led up an s and re sion. Optimisa d project docume	nd the inte sults. The ation of ta ct manage entation c	errelation ey develo sks and v ement teo hannels.	nships ar op a basi workflow chnique Practica
4 5 6 7 8	shown. for deci They co Contents Structu in produ present applica Forms of Project Participa Formal: Content: Forms of Term pa work, or Prerequis Module Application	The students ision-making ompile the pr s: ring of tasks uct developr tation techni ation of study f teaching: tion requireme Non f assessment: aper, written ral examination on of the mod tronics (B.Sc.	vidual particip s continuously oject result and oject result and n mechatronic nent and proje ques, technica basics. ents: e e e examination, co on or examinat ard of credit poin pass ule (in the followin)	ants are docume make de ddraw a produc: ect work. al comm ombinat ion durir its:	identif ent pro ecision: critica t devel Targe nunicati	ied, divic ject step s. Iconclus opment. t-oriente ion and ion and	led up an s and re sion. Optimisa d project docume	nd the inte sults. The ation of ta ct manage entation c	errelation ey develo sks and v ement teo hannels.	nships ar op a basi workflow chnique Practica
4 5 6 7 8 9	shown. for deci They co Contents Structu in produ present applica Forms of Project Participa Formal: Content: Forms of Term pa work, or Prerequis Module Application Mechat Importan	The students ision-making ompile the pro- sering of tasks is uct developre- tation techni- tation of study f teaching: tion requirement istic nor equirement aper, written cal examination on of the mod tronics (B.Sc. isce of the grad ing to BRPO	vidual particip s continuously oject result and oject result and n mechatronic nent and proje ques, technica basics. ents: e e e examination, co on or examinat ard of credit poin pass ule (in the followin	ants are docume make de ddraw a produc: ect work. al comm ombinat ion durir its:	identif ent pro ecision: critica t devel Targe nunicati	ied, divic ject step s. Iconclus opment. t-oriente ion and ion and	led up an s and re sion. Optimisa d project docume	nd the inte sults. The ation of ta ct manage entation c	errelation ey develo sks and v ement teo hannels.	nships ar op a basi workflow chnique Practica
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4 5 6 7 8 9	shown. for deci They co Contents Structu in produ present applica Forms of Project Participa Formal: Content: Forms of Term pa work, or Prerequis Module Mechat Importan accordi N.N.	The students ision-making ompile the pro- sering of tasks uct developres tation techning tation of study f teaching: tion requirement ation requirement non f study f teaching: tion requirement aper, written cal examination on of the mod tronics (B.Sc. ince of the grad ing to BRPO coordinator: formation:	vidual particip s continuously oject result and oject result and n mechatronic nent and proje ques, technica basics. ents: e e e examination, co on or examinat ard of credit poin pass ule (in the followin)	ants are docume make de ddraw a produc: ect work. al comm ombinat ion durir its:	identif ent pro ecision: critica t devel Targe nunicati	ied, divic ject step s. Iconclus opment. t-oriente ion and ion and	led up an s and re sion. Optimisa d project docume	nd the inte sults. The ation of ta ct manage entation c	errelation ey develo sks and v ement teo hannels.	vorkflow Practic

1225	ication er: Course:	Workload: 150 h		Stuc	ly seme	ster:	Frequenc	y or the	Duratio	on:
1225	-	150 h					offer			
	Course:		5	4th	sem.		Annual		1 sem	
1	Course:		C C				(Summe	r)		•
1	Course:				_		` I	·		
_			Planned grou	p sizes	Scop	e			Self-stu	dy
							teaching	assroom		
	Lecture		60 students		0	weekly	0	h	0	h
						hours				
	Sem. less	sons	30 students		0	weekly	0	h	0	h
-	<u> </u>				0	hours	0		0	
	Exercise		20 students		0	weekly hours	0	h	0	h
F	Practical	or seminar	15 students		2	weekly	30	h	120	h
	. raouoa				2	hours	50		120	
Γ	Supervise	ed self-stud	y 60 students		0	weekly	0	h	0	h
		-	competences:			hours				
3	larger ta manage	ring of mor asks and w ement tee	e complex task /ork processes in chniques, pres	n produc entatior	ct deve n tech	lopment nniques,	and pro technic	ject work cal com	. Targete Imunicati	d proje on ar
		entation ch ynamics, e	nannels. Dealing etc.	with ch	allengii	ng projec	ct topics,	, e.g. con	flict man	ageme
4		teaching:								
5	Project Participat	tion require	ments:							
Ť	Formal:		one							
	Content:		one							
6		assessment								
	•	•	en examination, c				n, perforn	nanceex	aminatior	n, proje
			ation or examina		ngthe	course				
7	-		ward of credit poir	1(S:						
0		examination of the mo	on pass odule (in the follow	ina studu	nroara	mmes)				
8		ronics (B.S		ng sludy	progra	nines)				
9			ade for the final gr	ade:						
-		ng to BRP(0							
		coordinator:								

 11
 Other information:

 12
 Language: German

Spe	ecialist Pro	oject with Mar	keting Aspects	5					PR5	
lden num	tification ber:	Workload:	Credits:	Stud	y seme		Frequenc offer	y of the	Durati	on:
129		150 h	5	5th:	sem.		Annual (Winter)		1 sem).
1	Course:	1	Planned group	sizes	Scop)e		contact lassroom q	Self-stu	ıdy
	Lecture		60 students		0	weekly hours	0	h	0	h
	Sem. less	sons	30 students		0	weekly hours	0	h	0	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		2	weekly hours	30	h	120	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
	itself an	d carries out	ssed. The tear clear, transpar nt. The students	m monit ent com	ors an Imunic	ation and	ons itself docum	as far as entation t	possible hatdoes	, defend justice t
3	itself an a practi learned Contents Classifi strategy	d carries out cal judgeme l in their studi :: cation of prol y, sales struc	clear, transpar nt. The students es to a comple olem areas/pro tures, compan	m monit ent com s apply, x proble ject ass y cultur	ors an imunic in a tar em sce signme	d questic ation and geted ar nario. nts in a si eral tech	ons itself docum nd balan uperord nology o	as far as entation t ced mann inate syst developm	possible hatdoes ier, whatt em, e.g. r ient, etc.	, defend justicet hey hav narketin Strategi
3	itself an a practi learned Contents Classifi strategy problem	Id carries out cal judgeme l in their studi s: cation of prol y, sales struc n-solving bel s. Potentialsc	clear, transpar nt. The students es to a comple: olem areas/pro	m monit ent com s apply, x proble 	ors an imunic in a tar em sce signme e, gen d simil	d questic ation and geted ar nario. nts in a si eral tech arities be	ons itself docum nd balan uperord nology tween s	as far as entation t ced mann inate syst developm tudent pro	possible hatdoes er, what em, e.g. r ient, etc. ojects and	, defend justicet hey hav narketin Strategi d industr
3	itself an a practi learned Contents Classifi strategy problem projects and 'sof	d carries out cal judgeme l in their studi s: cation of prol y, sales struc n-solving bel s. Potentials c ft skills' teaching:	clear, transpar nt. The students es to a comple: olem areas/pro tures, compan naviour. Differe	m monit ent com s apply, x proble 	ors an imunic in a tar em sce signme e, gen d simil	d questic ation and geted ar nario. nts in a si eral tech arities be	ons itself docum nd balan uperord nology tween s	as far as entation t ced mann inate syst developm tudent pro	possible hatdoes er, what em, e.g. r ient, etc. ojects and	, defend justicet hey hav narketin Strategi d industr
	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat	Id carries out cal judgement in their studi scation of prol y, sales struc n-solving bel s. Potentials of ft skills' teaching: tion requirement Non	clear, transpare nt. The students es to a complex olem areas/pro tures, company naviour. Different of the team in te nts:	m monit ent com s apply, x proble 	ors an imunic in a tar em sce signme e, gen d simil	d questic ation and geted ar nario. nts in a si eral tech arities be	ons itself docum nd balan uperord nology tween s	as far as entation t ced mann inate syst developm tudent pro	possible hatdoes er, what em, e.g. r ient, etc. ojects and	, defend justicet hey hav narketin Strategi d industr
4	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Forms of Formal: Content:	Id carries out cal judgeme in their studi s: cation of prol y, sales struc n-solving bel s. Potentials of ft skills' teaching: tion requireme Non assessment: aper, written of	clear, transpare nt. The students es to a complex olem areas/pro tures, compan naviour. Different of the team in te nts: e e examination, co	m monit ent com s apply, x proble ject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme re, gen d simil compos	d questic ation and geted an nario. nts in a su eral tech arities be sition (inco amination	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defend justicet hey hav narketin Strategi d industr , capacit
4	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Forms of Project Content: Forms of Term pa work, or Prerequis	d carries out cal judgeme in their studi cation of prol y, sales struc n-solving bel s. Potentials of ft skills' teaching: tion requireme Non assessment: aper, written e al examination	clear, transpare nt. The students es to a complex olem areas/pro tures, compan naviour. Different of the team in te nts: e e examination, co on or examination pass	m monit ent com s apply, x proble oject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme c, gen d simil composi- ion exa	d questic ation and geted an nario. nts in a su eral tech arities be sition (incl amination course	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defend justicet hey hav narketin Strategi d industr , capacit
4 5 6 7	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Formal: Content: Forma of Prormal: Content: Forms of Term pa work, or Prerequis Module Applicatio	In their studi cal judgement in their studi cation of prof y, sales struct n-solving bel s. Potentials of ft skills' teaching: tion requirement Non- assessment: aper, written of al examination on of the modu cronics (B.Sc.)	clear, transpare nt. The students es to a comple: olem areas/pro- tures, compan- naviour. Different of the team in te nts: e examination, co- on or examination pass ule (in the following)	m monit ent com s apply, x proble oject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme c, gen d simil composi- ion exa	d questic ation and geted an nario. nts in a su eral tech arities be sition (incl amination course	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defend justicet hey hav narketin Strategi d industr , capacit
4 5 7 8	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Forms of Project Participat Forms of Term pa work, or Prerequis Module Application Accordi	d carries out cal judgeme in their studi cation of prol y, sales struc n-solving bel s. Potentialsc ft skills' teaching: tion requireme Non assessment: aper, written e al examination on of the modu cronics (B.Sc.) ice of the grad- ing to BRPO	clear, transpare nt. The students es to a comple: olem areas/pro- tures, compan- naviour. Different of the team in te nts: e e examination, co- on or examination pass ule (in the followin	m monit ent com s apply, x proble oject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme c, gen d simil composi- ion exa	d questic ation and geted an nario. nts in a su eral tech arities be sition (incl amination course	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defenc justicet hey hav narketin Strategi d industr , capacit
4 5 7 8 9	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Forms of Project Participat Formal: Content: Forms of Term pa work, or Prerequis Module Applicatio Mechat	d carries out cal judgeme in their studi cation of prol y, sales struc n-solving bel s. Potentials of ft skills' teaching: tion requireme Non assessment: aper, written e al examination on of the modu cronics (B.Sc.) ice of the grad ing to BRPO coordinator:	clear, transpare nt. The students es to a comple: olem areas/pro- tures, compan- naviour. Different of the team in te nts: e examination, co- on or examination pass ule (in the following)	m monit ent com s apply, x proble oject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme c, gen d simil composi- ion exa	d questic ation and geted an nario. nts in a su eral tech arities be sition (incl amination course	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defenc justicet hey hav narketin Strategi d industr , capacit
4	itself an a practi learned Contents Classifi strategy problem projects and 'sof Project Participat Forms of Project Participat Formal: Content: Forms of Term pa work, or Prerequis Module Applicatio Mechat	In their studi cal judgeme in their studi cation of prof y, sales struc n-solving bel s. Potentials of ft skills' teaching: tion requireme Non- assessment: aper, written e al examination on of the modu ronics (B.Sc.) ice of the grad- ing to BRPO coordinator:	clear, transpare nt. The students es to a comple: olem areas/pro- tures, compan- naviour. Different of the team in te nts: e examination, co- on or examination pass ule (in the following)	m monit ent com s apply, x proble oject ass y cultur nces an rms of c	iors an imunic in a tar em sce signme c, gen d simil composi- ion exa	d questic ation and geted an nario. nts in a su eral tech arities be sition (incl amination course	uperord nology ividual le	as far as entation t ced mann inate syst developm tudent pro evel of kno	possible hat does er, what em, e.g. r em, e.g. r pent, etc. bjects and bwledge)	, defenc justicet hey hav narketin Strategi d industr , capacit

dentification	•							QM	
number:	Workload:	Credits:	Study	y semes		Frequency offer	of the	Durati	on:
1229	150 h	5	4th c	or 6th s	sem.	Annual (Summer	·)	1 sem	1.
1 Course:	1	Planned group	sizes	Scop	e	Actual c time / cla teaching	assroom	Self-stu	ıdy
Lecture		60 students		2	weekly hours	30	h	45	h
Sem. les	sons	30 students		2	weekly hours	30	h	45	h
Exercise	9	20 students		0	weekly hours	0	h	0	h
Practica	l or seminar	15 students		0	weekly hours	0	h	0	h
Supervis	sed self-study	60 students		0	weekly hours	0	h	0	h
	ın a tamiliar fi	eld of work by b							

- ³ 1 Understanding quality
 - The term quality
 - Quality and its characteristics
 - Quality management
 - 2 Quality management systems
 - Standards and models for QM systems
 - ISO 9000 series of standards
 - Process orientation
 - 3 Quality tools
 - Data collection tools
 - Tools for data analysis
 - 4 Management and creativity tools
 - Managementtools (M7)
 - Creativity tools (K7)
 - 5 Quality management in development
 - Kano model
 - Quality Function Deployment
 - FMEA
 - 6 Statistical design of experiments
 - Classical design of experiments
 - Optimum search procedure
 - Robust processes according to Taguchi
 - Improvement strategies according to Shainin
 - 7 Quality controlling
 - Quality cost models
 - Quality cost accounting
 - 8 Quality management in procurement
 - Definition of procurement strategies
 - Factors of supplier selection
 - Negotiate quality management contracts
 - Initial sample testing
 - Incoming goods inspection
 - 9 Statistical methods in quality management
 - Sampling and population
 - Distributions
 - Visualisation of data
 - Correlations
 - Linear regression analysis
 - 10 Six Sigma
 - Introduction to Six Sigma
 - DMAIC cycle as a systemic approach
 - 11 Quality management in production
 - Quality testing
 - Test equipment management
 - Proof of suitability of measuring systems
 - Statistical process control
 - 12 Quality management during field use
 - Field data management
 - lsochronous diagram
 - Weibull analysis
 - Forms of teaching:

4

Lecture, sem. lessons, supplemented by guest lectures

5	Participation req	uirements:
	Formal:	None
	Content:	None
6	Forms of assessr	nent:
	Writtenexamir	nation, combination examination or oral examination
7	Prerequisite for t	he award of credit points:
	Moduleexami	nation pass
8	Application of the	e module (in the following study programmes)
	Biotechnology	and Instrumentation Engineering (B.Sc.), Engineering Computer Sciences
	· · · · ·	echatronics (B.Sc.)
9		e grade for the final grade:
	according to B	RPO
10	Module coordina	tor:
	Prof. DrIng. N	lagnus Horstmann
11	Other information	ח:
	Literature will b	be announced at the beginning of the course.
12	Language:	
	German	

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dent numk	ification	Workload:	Credits:	Study	/ seme		Frequenc offer	cy of the	Duratio	on:
1231		150 h	5	5th s	sem.		Annual		1 sem	
							(Winter)			
	Course:		Planned group	sizes	Scop	e		contact :lassroom a	Self-stue	dy
	Lecture		60 students		2	weekly hours		h	45	h
	Sem. les	sons	30 students		1	weekly hours	-	h	22.5	h
	Exercise		20 students		0	weekly hours		h	0	h
		l or seminar	15 students		1	weekly hours	15	h	22.5	h
		ed self-study	60 students		0	weekly hours	0	h	0	h
2	Learning		know how mod		mputo	rbordwo	roworka	、		
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		etc.)	obitooture of m	onhi	Droct					
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		r leaching:								
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5	Participation req	uirements:
	Formal:	None
	Content:	Basic computer science and programming
		knowledge
		Basic knowledge of digital technology
		Modules:
		1045 Digital Electronics II;
		1070 Digital ElectronicsI;
		1105 Computer Science 1
6	Forms of assessr	
		nation or oral examination
7		he award of credit points:
	Moduleexami	
8	Application of the	e module (in the following study programmes)
	Electrical Engi (B.Sc.)	neering (B.Eng.), Engineering Computer Sciences (B.Eng.) and Mechatronics
9	Importance of the	e grade for the final grade:
	according to B	RPO
10	Module coordina	itor:
	Prof. DrIng. W	/olfram Schenck
11	Other information	
	Literature will b	be announced at the beginning of the course.
12	Language:	
	German	

Aut	omaticCo		ering						RT	
Iden num	tification ber:	Workload:	Credits:	Stud	y semes		Frequenc offer	y of the	Duratio	on:
123	4	150 h	5	4th s	sem.		Annual (Summe	er)	1 sem	
1	Course:		Planned group	sizes	Scop	e	Actual o time / c teaching	lassroom	Self-stu	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
		ed self-study	60 students		0	weekly hours	0	h	0	h
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	technol apply t Unders indepe	logy solutions the basic m tanding the p ndent solution	s. Grasp the pr	ractical cribing cance c	signific and a of contr	cance of analysing ol techn	control g contro ology. Ei	enginee I engine nabling ti	ring. Desc eering pr	ribe and
3	technol apply t Unders indeper Contents Fundan amplifie behavio diagran elemen	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer n, Laplace tra its, simulation	s. Grasp the pr leans of desc practical signific	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis	signific and a f contr gineeri ompor eleme behavi and sy	cance of analysing ol techning applic ments of nts, norr our of tra nthesis of	control g contro ology. En cation are control malisatio ansfer ele of analog	engineer l engine habling the eas. engine on and ements, l gue and o	ring. Desc eering pro- he develo ering, op linearisati ocus curv digital cor	eribe and ocesses pment c erationa on, time es, Bode atrol loop
3	technol apply t Unders indepen Contents Fundan amplifie behavio diagran elemen fuzzy co	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system pur of transfer m, Laplace tra ts, simulation ontrollers, sta f teaching:	s. Grasp the provident of the provident	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis	signific and a f contr gineeri ompor eleme behavi and sy	cance of analysing ol techning applic ments of nts, norr our of tra nthesis of	control g contro ology. En cation are control malisatio ansfer ele of analog	engineer l engine habling the eas. engine on and ements, l gue and o	ring. Desc eering pro- he develo ering, op linearisati ocus curv digital cor	eribe and ocesses pment c erationa on, time es, Bode atrol loop
	technol apply t Unders indeper Contents Fundan amplifie behavio diagran elemen fuzzy co Forms of Lecture Participa Formal:	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer n, Laplace tra tots, simulation ontrollers, sta f teaching: e, practicals a tion requireme None	s. Grasp the provident of the provident	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis	signific and a f contr gineeri ompor eleme behavi and sy	cance of analysing ol techning applic ments of nts, norr our of tra nthesis of	control g contro ology. En cation are control malisatio ansfer ele of analog	engineer l engine habling the eas. engine on and ements, l gue and o	ring. Desc eering pro- he develo ering, op linearisati ocus curv digital cor	eribe and ocesses pment c erationa on, time es, Bode atrol loop
4	technol apply t Unders indeper Contents Fundan amplifie behavio diagran elemen fuzzy co Forms of Lecture Participa Formal: Content:	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer n, Laplace tra ton requireme <u>n</u> , practicals a tion requireme <u>None</u>	s. Grasp the providence of description of description and description and for a control engineer description, transformation, and of control loo te controllers.	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis ops, stal	signific and a f contr gineeri ompor eleme behavi and sy oility, c	cance of analysing ol techning applic nents of nts, norr our of tra nthesis of liscontin	control g contro ology. En cation are control malisatio ansfer ele of analog uous co	engineer habling the habling the eas. engine on and ements, h gue and htrollers,	ring. Desc eering pro- he develo linearisati ocus curv digital cor digital co	erationa on, time es, Bode ntrol loop
4 5 6	technol apply t Unders indepen Contents Fundan amplifie behavio diagran elemen fuzzy co Forms of Lecture Participa Formal: Content: Forms of Written Prerequis module	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer n, Laplace tra sts, simulation ontrollers, sta f teaching: e, practicals a tion requireme None f assessment: examination, site for the awa e examination	s. Grasp the provident of the provident	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis ops, stal	signific and a f contr gineeri ompor eleme behavi and sy bility, d	erformance	control g contro ology. En cation are control malisatio ansfer ele of analog uous co	engineer habling the habling the eas. engine on and ements, h gue and htrollers,	ring. Desc eering pro- he develo linearisati ocus curv digital cor digital co	erationa on, time es, Bode ntrol loop
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4 5 7 8 9	technol apply t Unders indepen Contents Fundan amplifie behavio diagrar elemen fuzzy co Forms of Lecture Participa Formal: Content: Forms of Written Prerequis module Biotech Importar accordi	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer n, Laplace tra ton requireme <u>k</u> , practicals a tion requireme <u>None</u> f assessment: examination, site for the awa examination on of the modu nology and lince of the grade ing to BRPO	s. Grasp the provident of the provident	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis ops, stal pps, stal seasse seasse ng study Engine	signific and a f contr gineeri eleme behavi and sy oility, d sility, d ssmen program	cance of analysing ol techning applic ments of nts, norr our of tra nthesis of liscontin erformane t mmes)	control g control ology. En cation are malisation ansfer ele of analog uous co	enginee l engine nabling the eas. engine on and ements, l gue and on ntrollers,	ring. Desc eering pro- he develop ering, op- linearisati ocus curv digital cor digital cor digital cor	erationa on, time es, Bode ntrol loop
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4 5 7 8 9	technol apply t Unders indepen Contents Fundan amplifie behavio diagran elemen fuzzy co Forms of Lecture Participa Formal: Content: Forms of Written Prerequis module Biotech Importan accordi	logy solutions the basic m tanding the p ndent solution s: nentals of c ers, system our of transfer m, Laplace tra ton requireme <u>k</u> , practicals a tion requireme <u>None</u> f eaching: e, practicals a tion requireme <u>None</u> f assessment: examination, site for the awa e examination on of the modu nology and lince of the grade ing to BRPO coordinator: Ing. Reinha formation: ure will be ann	s. Grasp the providence of description of description of the secret of t	ractical cribing cance c ntrol eng ering, c ansfer quency nalysis ops, stal pps, stal <u>xamina</u> ts: <u>se asse</u> ng study <u>Engine</u> de:	signific and a f contr gineeri eleme behavi and sy oility, d sility, d ssmen program ering (E	erformance s.Sc.) and	control g control ology. En cation are control malisation ansfer ele of analog uous co ce exam	enginee l engine nabling the eas. engine on and ements, l gue and on ntrollers,	ring. Desc eering pro- he develop ering, op- linearisati ocus curv digital cor digital cor digital cor	erationa on, time es, Bode ntrol log

1.00	otics								ROB	
	tification ber:	Workload:	Credits:	Stud	ly seme		Frequency offer	of the	Duratic	n:
124	0	150 h	5	5th	sem.		Annual (Winter)		1 sem.	
1	Course:	1	Planned group	sizes	Scop)e	Actual co time / cla teaching		Self-stud	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervis	ed self-study	60 students		0	weekly hours	0	h	0	h
	both the They wi	e practical si	e robot system gnificance of r ne capable of i application	obotics	and c	lifferent	approach	ies to rol	oot devel	opmer
3	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav	erobots oulators t kinematics (ard and invers e robots ors for mobile cial intelligency	incl. mathemat e kinematics robots ce and robotics		ndatior	-	-			
	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learn	e: ang content: bulators t kinematics (ard and inversion e robots ors for mobile cial intelligence	incl. mathemat e kinematics robots ce and robotics		ndatior	-	-			
3	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learm Forms of Lecture	s: ng content: pulators t kinematics (ard and invers e robots ors for mobile cial intelligence viour-based r ing robots t eaching: a, sem. lesson	incl. mathemat e kinematics robots e and robotics obotics s with exercise	3		ns)				
4	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learm Forms of Lecture	ard and inverse or obots ors for mobile cial intelligence viour-based r ing robots teaching: e, sem. lesson tion requireme None Math	incl. mathemat e kinematics robots ce and robotics obotics s with exercise nts: e nematics 1 and	s, pract 2, Com	ical co	urse			nics, Elect	
4 5	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture Participa Formal: Content:	s: ng content: bulators t kinematics (ard and inversive e robots ors for mobile cial intelligence viour-based r ing robots teaching: e, sem. lesson tion requireme None Math Engi f assessment:	incl. mathemat e kinematics robots ce and robotics obotics s with exercise nts: e nematics 1 and neering 1 and 2	s, pract 2, Com 2, Physi	ical co puter S cs	urse Science,	Technica	Mechar		rical
4 5 6	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture Participa Formal: Content:	s: ng content: pulators t kinematics (ard and inversive e robots ors for mobile cial intelligence viour-based r ing robots f teaching: e, sem. lesson tion requireme None Rath Engi f assessment: examination, site for the awa	incl. mathemat e kinematics robots ce and robotics obotics s with exercise nts: e nematics 1 and neering 1 and 2 <u>combination e</u> rd of credit point	s, pract 2, Com 2, Physi examina ts:	ical co puter S cs tion, pe	urse Science, erforman	Technica	Mechar		rical
4 5 6 7	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Applicatio	s: ng content: pulators t kinematics (ard and inversive e robots ors for mobile cial intelligence viour-based r ing robots f teaching: e, sem. lesson tion requireme None Rath Engi f assessment: examination, site for the awa e examination on of the modu nology and lite ering Compute	incl. mathemat e kinematics robots ce and robotics obotics s with exercise nts: e nematics 1 and 2 combination e	s, pract 2, Com 2, Physi examina ts: se asse ng study Engine	ical co puter S cs tion, pe ssmen progra ering (I	urse Science, erformane t mmes) 3.Sc.), Ele	Technica ce examir ectrical En	Mechar nation or	oral exam g (B.Eng.)	rical hinatior
4 5 6 7	Contents Teachir - Manip - Robo - Forwa - Mobil - Senso - Artific - Behav - Learn Forms of Lecture Participa Formal: Content: Forms of Written Prerequis Module Biotech Enginee Manage	s: ng content: pulators t kinematics (ard and inversi- e robots ors for mobile cial intelligence viour-based r ing robots teaching: e, sem. lesson tion requirement Math Engi f assessment: examination, site for the awa examination on of the modu anology and li- ering Comput ement (B.Sc.) nce of the grade	incl. mathematics robots ce and robotics obotics s with exercise nematics 1 and 2 nematics 1 and 2 combination e rd of credit point pass and coursule (in the followin nstrumentation	2, Com 2, Com 2, Physi examina ts: se asse se asse ng study Engine 3.Eng.), N	ical co puter S cs tion, pe ssmen progra ering (I	urse Science, erformane t mmes) 3.Sc.), Ele	Technica ce examir ectrical En	Mechar nation or	oral exam g (B.Eng.)	rical hinatior
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11	Other information:
	Literature and other sources will be announced at the beginning of the course.
12	Language:
	German

Sim	ulation T	echnology							SIM		
	tification ber:	Workload:	Credits:	Study	y semes		Frequency of the offer		Duratio	Duration:	
124		150 h	5	sem.		Annual (Winter)		1 sem	1 sem.		
1	Course		Planned group sizes		Scop	e	Actual c time / cla teaching	assroom	Self-stud	Self-study	
	Lecture	•	60 students		2	weekly hours	30	h	45	h	
	Sem. le	ssons	30 students		1	weekly hours	15	h	22.5	h	
	Exercis	е	20 students		0	weekly hours	0	h	0	h	
	Practica	al or seminar	15 students		1	weekly hours	15	h	22.5	h	
	Supervi	sed self-study	60 students		0	weekly hours	0	h	0	h	
3	- 9 - 0 - 0 - 0 - 0	results. compare simuland assess the can discretise n the form of d understand the procedures in t putline and exp	cal and electric lated time curve model quality a continuous-tim ifference equa e essential princ erms of efficien plain one-stepp	es of a r and sim ne mode tions (z ciples o ncy, sta	nodel v nulatior els and -super f one-s bility a	with the r accuration implement position tep proc	measured cy. entthem o functions cedures a racy.	d signals on an em s). Ind evalu	of a real s	ystem system	
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4	Forms of teachin	g:
	Lecture, sem. I	essons with exercises, practical course
5	Participation req	uirements:
	Formal:	None
	Content:	Modules:
	!	1233 Automatic Control Engineering;
6	Forms of assessr	nent:
	Written or oral	examination; in each case with preliminary examination performance
7		he award of credit points:
	Moduleexami	nation pass with preliminary examination
8	Application of th	e module (in the following study programmes)
		neering (B.Eng.), Engineering Computer Sciences (B.Eng.) and Mechatronics
	(B.Sc.)	
9		e grade for the final grade:
	according to B	RPO
10	Module coordina	itor:
	Prof. DrIng. N	<i>I</i> artin Kohlhase
11	Other information	
	Literature will k	be announced at the beginning of the course.
12	Language:	
	German	

	hnical Me	chanics 1							TM1	
Iden num	tification ber:	Workload:	Credits:	Stud	Study semester:			y of the	Duration:	
126	0	150 h	5	1st s	em.		Annual (Winter)		1 sem.	
1	Course:		Planned group sizes		Scop	De	Actual o time / c teachin	lassroom	Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
	Supervise	ed self-study	60 students		0	weekly hours	0	h	0	h
	strain. Skills: Calculation of mechanical loads, design of bending parts Knowledge: modelling of mechanical systems									
	Knowle	dge: modelliı	ng of mechanic		-	oending	parts			
3	Knowlee Softwar	dge: modelliı e tools: Exce	ng of mechanic		-	oending	parts			
3	Knowlee Softwar Contents	dge: modellir e tools: Exce :	ng of mechanic I, Matlab	calsyste	ms		-	iple. Bea	rinas dec	arees o
3	Knowled Softwar Contents Introduc	dge: modelli e tools: Exce : ction, force,	ng of mechanic I, Matlab moment. Basic	c opera	ems ations.	free-boo	dy princ	•	-	-
3	Knowled Softwar Contents Introduc freedon gravity.	dge: modellin e tools: Exce : ction, force, n Mechanica Internal force	ng of mechanic I, Matlab moment. Basic Ilequilibrium. Ro es. Hooke's law	c opera ope, per	ations. ndulum rature	free-boo rod,pull strain.	dy princ ey.Interr	nediate re	-	-
3	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of	dge: modellin e tools: Exce : ction, force, n Mechanica Internal force t beam bend teaching:	ng of mechanic I, Matlab moment. Basic Ilequilibrium. Ro es. Hooke's law ing. Second mo	c opera ope, per	ations. ndulum rature	free-boo rod,pull strain.	dy princ ey.Interr	nediate re	-	-
4	Knowled Softwar Contents Introduct freedon gravity. Straight Forms of Lecture	dge: modellin e tools: Exce ction, force, n Mechanica Internal force <u>t beam bendi</u> teaching: , practicals a	ng of mechanic I, Matlab moment. Basic Ilequilibrium. Ro es. Hooke's law ing. Second mo	c opera ope, per	ations. ndulum rature	free-boo rod,pull strain.	dy princ ey.Interr	nediate re	-	-
	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bend teaching: , practicals a ion requireme	ng of mechanic I, Matlab moment. Basic I equilibrium. Ro es. Hooke's law ing. Second mo nd exercises ents:	c opera ope, per	ations. ndulum rature	free-boo rod,pull strain.	dy princ ey.Interr	nediate re	-	-
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4	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat Formal: Content: Forms of	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bend teaching: , practicals a ion requireme Non Non assessment:	ng of mechanic I, Matlab moment. Basic lequilibrium. Re es. Hooke's law ing. Second mo ind exercises ents: e e	c opera ope, per u, tempe oment o	ations. ndulum rature f area.	free-boo nrod,pull strain. Parallela	dy princ ey.Interr xistheo	rem.	eactions. (Centre o
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4 5 6 7 8	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat Formal: Content: Formal Content: Forms of Written Prerequis Module Applicatio Mechat	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mode ronics (B.Sc. ce of the grad	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir	examina ts: rse asse ng study	ations. ndulum rature f area. tion, pe	free-boo nrod, pull strain. Parallel a erforman	dy princ ey.Interr xistheo	rem.	eactions. (Centre c
4 5 7 8 9	Knowled Softwar Contents Introduct freedom gravity. Straight Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Application Mechat Importan accordi	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mode ronics (B.Sc. ce of the grad ng to BRPO	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir)	examina ts: rse asse ng study	ations. ndulum rature f area. tion, pe	free-boo nrod, pull strain. Parallel a erforman	dy princ ey.Interr xistheo	rem.	eactions. (Centre c
4 5 6 7 8	Knowled Softwar Contents Introduct freedom gravity. Straight Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Mechat Importan accordi	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO coordinator:	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir) e for the final gra	examina ts: rse asse ng study	ations. ndulum rature f area. tion, pe	free-boo nrod, pull strain. Parallel a erforman	dy princ ey.Interr xistheo	rem.	eactions. (Centre c
4 5 7 8 9 10	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Mechat Importan accordi Module o	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO coordinator: -Ing. Peter R	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir) e for the final gra	examina ts: rse asse ng study	ations. ndulum rature f area. tion, pe	free-boo nrod, pull strain. Parallel a erforman	dy princ ey.Interr xistheo	rem.	eactions. (Centre c
4 5 7 8 9	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi Other infe	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mode ronics (B.Sc. ce of the grad ng to BRPO coordinator: -Ing. Peter R ormation:	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir) e for the final gra	examina ts: se asse ng study	tions. ndulum rature f area. tion, pe ssmen progra	free-boo nrod, pull strain. Parallel a erformane it mmes)	dy princ ey.Interr xistheor	rem.	eactions. (Centre c
4 5 7 8 9 10	Knowled Softwar Contents Introduc freedon gravity. Straight Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi Other infe	dge: modellin e tools: Exce ction, force, n Mechanica Internal force beam bendi teaching: , practicals a ion requireme Non assessment: examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO coordinator: -Ing. Peter R ormation: re will be ann	ng of mechanic I, Matlab moment. Basic al equilibrium. Ro es. Hooke's law ing. Second mo and exercises ents: e e , combination e ard of credit point pass and cour ule (in the followir) e for the final gra	examina ts: se asse ng study	tions. ndulum rature f area. tion, pe ssmen progra	free-boo nrod, pull strain. Parallel a erformane it mmes)	dy princ ey.Interr xistheor	rem.	eactions. (Centre c

rec	hnical Me	chanics 2							TM2	
Iden num 126		Workload: 150 h	Credits: 5		Study semester: 2nd sem.			er)	Duratio	
1	Course:	1	Planned grou	ıp sizes	Scop	e	Actual time / c teachin	lassroom	Self-stud	dy
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. less	sons	30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical	or seminar	15 students		1	weekly hours	15	h	22.5	h
2		ed self-study outcomes/co	60 students		0	weekly hours	0	h	0	h
	of force Knowlee	s and mome dge: Unders	tanding kinem			n of move	ementp	rocesses	underthe	Impact
3	Software tools: Excel, Matlab Contents: Straight-line movements. Plane movements. Circular movements. Principle of Varignon's theorem. Moment of inertia. Parallel axis theorem. Translation. Rot discrete systems. Stiction, friction. Conversion of Energy. Power. Oscillator v							flinearm		
	discrete freedon	e systems. St				stheorer	m.Trans	ation. Rot	ation.Dyr	namics of
4	freedon Forms of	e systems. St n. teaching:				stheorer	m.Trans	ation. Rot	ation.Dyr	namics of
4	freedon Forms of Lecture Participat Formal:	e systems. St n. teaching: , practicals a ion requireme Non	iction, friction. and exercises ents: e			stheorer	m.Trans	ation. Rot	ation.Dyr	namics of
	freedon Forms of Lecture Participat Formal: Content: Forms of	e systems. St n. teaching: , practicals a ion requireme Non assessment:	iction, friction. and exercises ents: e e	Conver	sion of I	s theorer Energy. F	m. Trans Power. C	ation. Rot	ation. Dyr vith one d	amics of egree of
5	freedon Forms of Lecture Participat Formal: Content: Forms of Written Prerequis	e systems. St n. teaching: , practicals a tion requireme Non assessment: examination site for the awa	iction, friction. and exercises ents: e	Convers examina nts:	sion of I	s theorer Energy. F	m. Trans Power. C	ation. Rot	ation. Dyr vith one d	amics of egree of
5	freedon Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Application Mechat	e systems. St n. teaching: , practicals a ion requireme Non assessment: examination site for the awa examinatior on of the mod ronics (B.Sc.	iction, friction. and exercises ents: e , combination ard of credit point pass and council ule (in the follow)	Converse examina nts: irse asse ring study	tion, pe	s theorer Energy. F erforman	m. Trans Power. C	ation. Rot	ation. Dyr vith one d	amics of egree of
5 6 7 8 9	freedon Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi	e systems. St n. teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO	iction, friction. and exercises ents: e e , combination ard of credit poi pass and cou ule (in the follow	Converse examina nts: irse asse ring study	tion, pe	s theorer Energy. F erforman	m. Trans Power. C	ation. Rot	ation. Dyr vith one d	amics of egree of
5 6 7 8 9 10	freedon Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi Module o Prof. Dr.	e systems. St n. teaching: , practicals a ion requirement ion requirement Non assessment: examination on of the awa examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO coordinator: -Ing. Peter F	iction, friction. and exercises ents: e , combination ard of credit poi pass and cou ule (in the follow) e for the final gr	Converse examina nts: irse asse ring study	tion, pe	s theorer Energy. F erforman	m. Trans Power. C	ation. Rot	ation. Dyr vith one d	amics of egree of
5 6 7 8 9	freedon Forms of Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicatio Mechat Importan accordi Module o Prof. Dr.	e systems. St n. teaching: , practicals a ion requireme Non assessment: examination site for the awa examination on of the mod ronics (B.Sc. ce of the grad ng to BRPO coordinator: -Ing. Peter F ormation: re will be ann	iction, friction. and exercises ents: e , combination ard of credit poi pass and cou ule (in the follow) e for the final gr	examina nts: irse asse ring study	tion, pe ssmen program	s theorer Energy. F erforman- t mmes)	m. Trans ^o ower. C	ation. Rot	ation. Dyr vith one d	amics of egree of

	nnical Eng	glish							TEN		
Ident numt	ification cer:	Workload:	Credits:	Stud	y seme:		Frequency offer	of the	Duratio	Duration:	
1263	3	150 h	5	4th	sem.		Annual (Summer)	1 sem	1 sem.	
1	Course:	•	Planned group sizes			e	Actual co time / cla teaching		Self-stu	Self-study	
Lecture			60 students		0	weekly hours	0	h	0	h	
	Sem. les	sons	30 students		4	weekly hours	60	h	90	h	
	Exercise	1	20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h	
	Supervis	ed self-study	60 students		0	weekly	0	h	0	h	
	e - P	stablish wide ersonal com	d present them r contexts and i petence: They	make a	critica	lassessn	nent.	-			
		nanagingautr	nentic English s			n nuenc	y and a	pio-aci	uve appr	roach tc	
3	- T m - T te	s: tudents can a hey master nathematical naterials; auto hey possess echnical prod	nentic English s netively particip engineering- operations; dim mated systems interdisciplina uct; managing	ources bate in ir relevar nensions s and In iry skills	nternat at term s and s dustry s (e.g. c	ional con hinology hapes; fc 4.0). discussir	iferences (e.g. m prces and	Janufacti mechani gs and t	uring pro isms; prop rends; pi	ocesses perties of itching a	
3	- S - T m - T	s: tudents can a hey master nathematical naterials; auto hey possess echnical prod	ictively particip engineering- operations; dim mated systems interdisciplina	ources oate in ir relevar nensions s and In ary skills project	nternat at term s and s dustry s (e.g. o s; desiş	ional con hinology hapes; fc 4.0). discussir gning cor	ferences (e.g. m prces and ng readin nference	anufactu mechani gs and t posters; a	uring pro isms; prop rends; pi academio	ocesses perties of itching a	
	- S - T m - T te Forms of Sem. le	s: tudents can a hey master nathematical naterials; auto hey possess echnical prod	actively particip engineering- operations; dim mated systems interdisciplina uct; managing dual and group	ources oate in ir relevar nensions s and In ary skills project	nternat at term s and s dustry s (e.g. o s; desiş	ional con hinology hapes; fc 4.0). discussir gning cor	ferences (e.g. m prces and ng readin nference	anufactu mechani gs and t posters; a	uring pro isms; prop rends; pi academio	ocesses perties of itching a	
4	- S - T m - T te Forms of Sem. le	tudents can a hey master nathematical naterials; auto hey possess echnical prod f teaching: ssons / indivio tion requireme Regu	actively particip engineering- operations; dim mated systems interdisciplina uct; managing dual and group	bate in ir relevar nension: s and In nry skills project work, e	nternat at term s and s dustry s (e.g. o s; desig tc. / se and ac	ional con hinology hapes; fc 4.0). discussir gning cor mester p	ferences (e.g. m prces and ng readin nference project (As icipation	anufactu mechani gs and t posters; a ssignmer	uring pro isms; prop rends; pi academic nt)	ocesses perties o itching a c writing)	

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

	tile Techn	ologies							TEX		
num		Workload:	Credits:		Study semester:			y of the		Duration:	
600)4	150 h	5 4		n or 6th sem.		Annual (Summer)		1 sem.		
1	Course:		Planned group	sizes Scope			Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
Sem. les		sons	30 students		2	weekly hours	30	h	45	h	
	Exercise		20 students		0	weekly hours	0	h	0	h	
	Practical	or seminar	15 students		0	weekly hours	0	h	0	h	
		ed self-study outcomes/con	60 students		0	weekly hours	0	h	0	h	
	analyse	and assess a	ile testing proc a topic from the					topics. S [.]	tudents	describe,	
3	analyse and assess a topic from the textile chain independently. Contents: Textile chain: primary spinning, secondary spinning, weaving, warp and wef narrow textiles, finishing, manufacture; textile machines; sustainability in intelligent/functional textiles; physical and other properties of textiles; standa										
	narrow intellige	textiles, finis ent/functional	hing, manufact	ure; te al and c	xtile m other pr	achines roperties	; sustair s of textil	ability in	the text	ile chain;	
4	narrow intellige instructi Forms of	textiles, finis ent/functional ions. Recent r teaching:	hing, manufact textiles; physica research topics	ure; te al and c	xtile m other pr	achines roperties	; sustair s of textil	ability in	the text	ile chain;	
	narrow intellige instructi Forms of Lecture	textiles, finis ent/functional ions. Recent i	hing, manufact textiles; physica research topics eminar	ure; te al and c	xtile m other pr	achines roperties	; sustair s of textil	ability in	the text	ile chain;	
4	narrow intellige instructi Forms of Lecture	textiles, finis ent/functional ions. Recent i teaching: , hands-on se	hing, manufact textiles; physica research topics eminar	ure; te al and c	xtile m other pr	achines roperties	; sustair s of textil	ability in	the text	ile chain;	
	narrow intellige instructi Forms of Lecture Participat Formal: Content: Forms of Project	textiles, finis ent/functional ions. Recent i teaching: , hands-on se ion requireme assessment: work	hing, manufact textiles; physica research topics eminar nts:	ure; te al and c along t	xtile m other pr	achines roperties	; sustair s of textil	ability in	the text	ile chain;	
5	narrow intellige instructi Forms of Lecture Participat Formal: Content: Forms of Project Prerequis Module	textiles, finis ent/functional ions. Recent i teaching: , hands-on se ion requirement assessment: work site for the awa examination	hing, manufact textiles; physica research topics eminar nts: rd of credit points pass	ure; te al and c along t	tile m ther pr the text	achines roperties tile chair	; sustair s of textil	ability in	the text	ile chain;	
5	narrow intellige instruction Forms of Lecture Participat Formal: Content: Forms of Project Prerequis Module Application Biotech	textiles, finis ent/functional ions. Recent i teaching: , hands-on se ion requirement assessment: work site for the awa examination on of the modu nology and Ir	textiles; physica research topics eminar nts:	along t along t s s s s s tudy	program	mmes) 3.Sc.), Me	; sustair s of textil n. echatror	ability in es; standa	the text ards; text	ile chain; ile testing	
5 6 7	narrow intellige instructi Forms of Lecture Participat Formal: Content: Forms of Project Prerequis Module Applicatio Biotech Energie Importan	textiles, finis ent/functional ions. Recent i teaching: , hands-on se ion requireme assessment: work site for the awa examination on of the modu nology and Ir s (B.Eng.) and	hing, manufact textiles; physica research topics eminar nts: rd of credit points pass ule (in the following nstrumentation F	g study ang study ang study	program	mmes) 3.Sc.), Me	; sustair s of textil n. echatror	ability in es; standa	the text ards; text	ile chain; ile testing	
5 6 7 8	narrow intellige instruction Forms of Lecture Participat Formal: Content: Forms of Project Project Module Application Biotech Energie Importan accordi	textiles, finis ent/functional ions. Recent i teaching: , hands-on se- ion requireme assessment: work site for the awa examination on of the modu nology and Ir s (B.Eng.) and ce of the grade	shing, manufact textiles; physica research topics eminar nts: ard of credit points pass le (in the following hstrumentation f l Industrial Engli e for the final grac	g study ang study ang study	program	mmes) 3.Sc.), Me	; sustair s of textil n. echatror	ability in es; standa	the text ards; text	ile chain; ile testing	
5 6 7 8 9	narrow intellige instructi Forms of Lecture Participat Formal: Content: Forms of Project Prerequis Module Biotech Energie Importan accordi Module o Prof. Dr.	textiles, finis ent/functional ions. Recent i teaching: , hands-on se ion requirement assessment: work site for the awa examination on of the modu nology and Ir s (B.Eng.) and ce of the grade ng to BRPO coordinator:	shing, manufact textiles; physica research topics eminar nts: ard of credit points pass le (in the following hstrumentation f l Industrial Engli e for the final grac	g study ang study ang study	program	mmes) 3.Sc.), Me	; sustair s of textil n. echatror	ability in es; standa	the text ards; text	ile chain; ile testing	

Lect Sem Exer Prace 2 Lear After 3 Con		Workload:							VM	
1276 1 Cou Lect Sem Exer Prace Supe 2 Lear After 3 Con 4 Form 5 Parti	:		Credits:	Study	/ semes		Frequenc	cy of the	Duratio	n:
Lect Sem Exer Prace 2 Lear After 3 Con		150 h	5	6th s	sem.		offer Annual (Summe	er)	1 sem.	
2 Lear After 3 Con	Course:		Planned group	Planned group sizes		e	Actual contact time / classroom teaching		Self-study	
Exer Prace Super 2 Lear After 3 Con 3 Con	Lecture		60 students		3	weekly hours	45	h	67.5	h
Prace Super 2 Lear After 3 Con 3 Con 4 Form Lec 5 Parti	Sem. les	sons	30 students		1	weekly hours	15	h	22.5	h
2 Lear Afte 3 Con 4 Forn Lec 5 Parti	Exercise		20 students		0	weekly hours	0	h	0	h
2 Lear After 3 Con 4 Forn Lec 5 Parti	Practical	or seminar	15 students		0	weekly hours	0	h	0	h
After 3 Con 4 Forn Lec 5 Parti	-	ed self-study	60 students		0	weekly hours	0	h	0	h
4 Form Lec 5 Parti	 apply the central contents to selected practical examples and case sindependently solve the associated tasks and present the results. critically reflect on the special features and tasks of sales and distribution recapitulate the course content independently and deepen their know self-study. Ideally, they form learning groups, which last throughout the study. 							wledge th	rough	
4 Form Lec 5 Parti	Contents	ntents:								
Lec 5 Parti		managemen Sales manag Sales manag managemen Sales manag Sales manag	gement in cons gement in indus ationship mana	n and sa mponer mponer umer go strial goo	les ma nt of the nt of the pods ma pds ma	nageme e basic s e market arkets arkets	nt trategic ing mix:	concept Basics of	operation	al sales
5 Parti		teaching:	s with exercises	6 0260	avamn		studios			
°		tion requirement		-, -0000	2.00110		5.0000			
	Partiaina	None		ofthee	ontost	ofthor		Aarkatin	(11/2)	
6 Form	Formal:		IY, KI UWIEUYE				Joquier	viaikeurig	(1140)	
7 Prer	ormal: Content: Forms of	ideal assessment:								
8 Appl	Formal: Content: Forms of Written Prerequi	ideal assessment: examination	rd of credit point	S:						

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

Elec	ctive Modu	lle								WM	
Iden num	tification ber:	Workload:		Credits:	Study	/ semes	ter:	Frequency offer	of the	Duration	ו:
900)2	150 h	5 5t		5th c	n or 6th sem.		Eachsem	lester	1 sem.	
1	Course:		Pla	anned group si	izes	Scope	e	Actual co time / cla teaching		Self-study	y
	Lecture		60) students			weekly hours	/	h		h
	Sem. less	ons	30) students			weekly hours	/	h		h
	Exercise		20) students			weekly hours	1	h		h
	Practical	or seminar	15	students		0	weekly hours	′ O	h	0	h
	Supervise	ed self-study	60) students			weekly hours	/	h		h
2	Learning	outcomes/con	npet	ences:							
3	Contents	:									
4	Forms of	teaching:									
5	Participat	ion requireme	nts:								
	Formal:										
	Content:										
6	⊢orms of	assessment:									
7	Prerequis	ite for the awa	ird c	f credit points:							
8		on of the modu ronics (B.Sc.)		n the following	study	progran	nmes)				
9		ce of the grade		the final grade):						
10		coordinator:									
11	Prof. Dr. Other infe	-Ing. Klaus D ormation:	urk	opp							
12	Language										
	Germar	<u> </u>									

Mate	erials and	d Component	Testing						WBP		
ldenti numb	ification	Workload:	Credits:	Stud	y seme:		Frequenc offer	y of the	Duratio	on:	
1278		150 h	5	3rd o				Annual (Winter)		1 sem.	
1	Course:		Planned group sizes		Scop	e	Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	weekly hours	30	h	45	h	
	Sem. les	sons	30 students	30 students		weekly hours	0	h	0	h	
	Exercise	9	20 students		0	weekly	0	h	0	h	
	Practica	l or seminar	15 students		2	weekly		h	45	h	
	Supervis	sed self-study	60 students		0	weekly	0	h	0	h	
3	technical applications, taking into account the production parameters. For this purpose, students acquire known examination procedures. In addition, they can assess the to component design or component testing. The stup procedures for the analytical examination of component efficiently. They can systematically detect a component derive suitable measures for improvement. They will learn and to present and apply it accordingly. They will learn effectively and efficiently in coordination with other stud Contents:						ransfera nts are a failures a ailure or a o develo orocess nts.	bility of m able to a and mate analyse a p a test p an exami	aterial pa pply suit rial chara sub-prol rocedure ination as	able te cteristic clemar in a tea	
	fi - lr - T - M - M - E - M - E - M - E	unctional spe offluence of sp parameters on echnological electrical and Aaterial identi Aethods for th Basics of dama Aeasuring equ Design of expe Problem-solvi	ecimen manufa the characteris , thermal, rheolo electromagnetic fication, chroma e investigation age analysis uipment/test ga eriments ng methods	acture, s stic valu ogical, c c mater atograp of agei	specin les optical, ialand ohy, ma ng, wea	nen geon acoustic compor issspect	netry, tes c and rac nent testi roscopy	stmethoo liation-re ng,	l and test lated as w		
4		Processing a c f teaching:	lamage								
_		es, exercises,									
5	Formal:	ation requireme None	Э								
	Content	None	Э								
0	Forma	faccoment									
6		f assessment: examination,	combination ex	kamina [.]	tion or (oralexar	nination				
6 7	Writter Prerequ	examination,	ard of credit points		tion or (oral exar	nination				

8	Mechanical Engineering (B.Eng.) and Mechatronics (B.Sc.)						
9	Importance of the grade for the final grade:						
	according to BRPO						
10	Module coordinator:						
	Prof. DrIng. Bruno Hüsgen						
11	Other information:						
	Literature will be announced at the beginning of the course.						
12	Language:						
	German						

Mat	terialsEng	gineering							WT	
Identification number:		Workload:	Credits:	Study	Study semester:		Frequency of the offer:		Duration:	
1281		150	5	2nd s	d semester		Annual (Summer)		1 sem.	
1	Course:		Planned group sizes:		Scope:		Actual contact time/classroom teaching		Self-study	
	Lecture		60 students		2	weekly hours	30	h	45	h
	Sem. lessons		30 students		1	weekly hours	15	h	22.5	h
	Exercise		20 students		0	weekly hours	0	h	0	h
	Practical or seminar		15 students		1	weekly hours	15	h	22.5	h
	Supervised self-study		60 students		0	weekly hours	0	h	0	h
	comparatively using material parameters and to select them appropriately for the application. They can analyse the material behaviour taking into account external stresses. They can apply their knowledge in practical experiments.									
3	Contents			•						
3	 Materia Mecha Materia Materia Materia Materia Materia Environ Compo 	al structure (me inical properties al behaviour (sta al changes (hea al designations nmental influenc osites and light	tals/atomic, plast s of metals and p atic/dynamic load at treatments, con ces (corrosion, m metals (lightweigh	ics/mole olymers ds) nstitution) nedia res	cular) istance,	ageing c	f plastics)			
3	 Materia Mecha Materia Materia Materia Materia Enviror Compo Materia Forms of 	al structure (me inical properties al behaviour (sta al changes (hea al designations mental influence osites and light als testing f teaching:	s of metals and p atic/dynamic load at treatments, con ces (corrosion, m metals (lightweigh	ics/mole olymers ds) nstitution) nedia res	cular) istance,	ageing c	f plastics)			
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