Appendix A: Course Schedule

for the study programme Renewable Energies B.Eng.

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

Specialisation: Power Generation Systems

First sem	nester		L	ST	E	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1039	Chemistry	CH	2	1	0	1	0	5
1074	Electrical Engineering 1	ET1	2	1	0	1	0	5
1150	Mathematics 1	MA1	4	4	0	0	0	10
1198	Physics 1	PH1	2	1	0	1	0	5
1238	Renewable Energy Industry	RW	2	2	0	0	0	5
	,	•				Tota	I CP:	30
Second s	emester		L	ST	E	P/S	SSS	CP
Module	Module title	Module						
number		ID						
1031	Biochemistry and Microbiology	BCM	2	1	0	1	0	5
1064	Electronics	ELR	2	1	0	1	0	5
1077	Electrical Engineering 2	ET2	2	1	0	1	0	5
1156	Mathematics 2	MA2	4	4	0	0	0	10
1202	Physics 2	PH2	2	1	0	1	0	5
	· · · ·	•				Tota	I CP:	30
Third ser	nester		L	ST	Ε	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1315	Automation Technology	AT	2	1	0	1	0	5
1024	Business Administration	BW	3	1	0	0	0	5
1097	Fundamentals of Energy Technology	GET	2	1	0	1	0	5
1107	Computer Science 1	INF1	2	1	0	1	0	5
1169	Metrology	MT	2	1	0	1	0	5
1085	Technical English 1	FSE1	0	4	0	0	0	5
						Tota	I CP:	30
Fourth se	emester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1111	Computer Science 2	INF2	2	1	0	1	0	5
1210	Product Risk Management	PRM	2	2	0	0	0	5
1220	Project 1	PR1	0	0	0	2	0	5
1235	Automatic Control Engineering	RT	2	1	0	1	0	5
1272	Process Engineering	VT	2	1	0	1	0	5
9018	Elective Module	WM				0		5
						Tota	I CP:	30
Fifth sem	nester		L	ST	E	P/S	SSS	СР
Module number	Module title	Module ID						

	T =		_		-		_	
1042	Decentralised Energy Systems	DEZ	2	1	0	1	0	5
1059	Electrical Machines	EM	2	1	0	1	0	5
1221	Project 2	PR2	0	0	0	2	0	5
9018	Elective Module	WM				0		5
9018	Elective Module	WM				0		5
1283	Wind and Hydropower	WWK	2	2	0	0	0	5
					•	Tota	I CP:	30
Sixth ser	nester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1010	Industrial Plant Layout	APL	2	1	1	0	0	5
1176	Modern Energy Policy	MEP	2	2	0	0	0	5
1193	Photovoltaics	PHV	2	1	0	1	0	5
1266	Thermal Use of Renewable Energies	TNE	2	1	0	1	0	5
9018	Elective Module	WM				0		5
9018	Elective Module	WM				0		5
		•				Tota	I CP:	30
Seventh	semester		L	ST	Ε	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1291	Bachelor Thesis	BA	0	0	0	0	0	12
1290	Colloquium	KOL	0	0	0	0	0	3
1292	Practical Project / Internship	PRA	0	0	0	0	0	15
		•		•		Tota	I CP:	30

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

CP = credit points

W/S = winter/summer semester

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

Elective I	Modules Power Generation Systen	ns							
Module number	Module title	Module ID	W/ S	L	ST	Е	P/S	SSS	СР
1013	Power Drive Technology	ATR	S	2	1	0	1	0	5
1032	Biogas and Biorefineries	BIO	W	2	2	0	0	0	5
1060	Power Systems	ENE	S	2	1	0	1	0	5
1078	Electric Traction	ETR	S	2	1	0	1	0	5
1323	Energy Efficiency in the Building	EIG	W	2	2	0	0	0	5
1095	Building Automation	GAT	S	2	2	0	0	0	5
3135	Gender and Diversity: Success Factors for Companies	GUD	W	2	2	0	0	0	5
1118	Investment and Financing	FIN	S	3	1	0	0	0	5
1138	Power Electronics	LE	W	2	1	0	1	0	5

1192	Personnel and Organisation	PUO	S	3	1	0	0	0	5
1209	Product and Price Management	PPM	W	3	1	0	0	0	5
1243	Sensors	SEN	W	2	2	0	0	0	5
1086	Technical English 2	FSE2	S	0	4	0	0	0	5
6004	Textile Technologies	TEX	S	2	2	0	0	0	5
1267	Thermodynamics 1	TD1	S	2	2	0	0	0	5
1324	Circular Economy According to Cradle to Cradle	ZW	W	2	2	0	0	0	5
1287	State Space Control	ZRG	S	2	1	0	1	0	5

Appendix B: Course Schedule

for the study programme Renewable Energies B.Eng.

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

Specialisation: Energy Efficient Systems

First sen	nester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1039	Chemistry	СН	2	1	0	1	0	5
1074	Electrical Engineering 1	ET1	2	1	0	1	0	5
1150	Mathematics 1	MA1	4	4	0	0	0	10
1198	Physics 1	PH1	2	1	0	1	0	5
1238	Renewable Energy Industry	RW	2	2	0	0	0	5
						Tota	I CP:	30
Second s	semester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1031	Biochemistry and Microbiology	BCM	2	1	0	1	0	5
1064	Electronics	ELR	2	1	0	1	0	5
1077	Electrical Engineering 2	ET2	2	1	0	1	0	5
1156	Mathematics 2	MA2	4	4	0	0	0	10
1202	Physics 2	PH2	2	1	0	1	0	5
	, ,		I		II.	Tota	I CP:	30
Third ser	mester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number	l l l l l l l l l l l l l l l l l l l	ID						
1315	Automation Technology	AT	2	1	0	1	0	5
1024	Business Administration	BW	3	1	0	0	0	5
1097	Fundamentals of Energy Technology	GET	2	1	0	1	0	5
1107	Computer Science 1	INF1	2	1	0	1	0	5
1169	Metrology	MT	2	1	0	1	0	5
1085	Technical English 1	FSE1	0	4	0	0	0	5
	3 -		_				I CP:	30
Fourth se	emester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1111	Computer Science 2	INF2	2	1	0	1	0	5
1210	Product Risk Management	PRM	2	2	0	0	0	5
1220	Project 1	PR1	0	0	0	2	0	5
1235	Automatic Control Engineering	RT	2	1	0	1	0	5
1272	Process Engineering	VT	2	1	0	1	0	5
9019	Elective Module	WM	_	-		0		5
			1				I CP:	30
Fifth sen	nester		L	ST	E	P/S	SSS	
Module	Module title	Module	_			'		
number	modello titto	ID						
1056	Electrical Energy Storage and Fuel	EEB	2	1	0	1	0	5
	Cells							
1221	Project 2	PR2	0	0	0	2	0	5

1243	Sensors	SEN	2	2	0	0	0	5
9019	Elective Module	WM		+		0		5
				-		_		5
9019	Elective Module	WM				0		
1283	Wind and Hydropower	WWK	2	2	0	0	0	5
						Tota	I CP:	30
Sixth ser	mester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1050	Efficient Illumination Technology	ELT	2	1	0	1	0	5
1095	Building Automation	GAT	2	2	0	0	0	5
1176	Modern Energy Policy	MEP	2	2	0	0	0	5
1193	Photovoltaics	PHV	2	1	0	1	0	5
9019	Elective Module	WM				0		5
9019	Elective Module	WM				0		5
	•		•	•		Tota	I CP:	30
Seventh	semester		L	ST	E	P/S	SSS	СР
Module	Module title	Module						
number		ID						
1291	Bachelor Thesis	BA	0	0	0	0	0	12
1290	Colloquium	KOL	0	0	0	0	0	3
1292	Practical Project / Internship	PRA	0	0	0	0	0	15
	•	•	•	•		Tota	I CP:	30

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

CP = credit points

W/S = winter/summer semester

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

Elective	Modules Energy Efficient Systems	•							
Module number	Module title	Module ID	W/ S	L	ST	Е	P/S	SSS	СР
1010	Industrial Plant Layout	APL	S	2	1	1	0	0	5
1013	Power Drive Technology	ATR	S	2	1	0	1	0	5
1032	Biogas and Biorefineries	BIO	W	2	2	0	0	0	5
1060	Power Systems	ENE	S	2	1	0	1	0	5
1078	Electric Traction	ETR	S	2	1	0	1	0	5
1323	Energy Efficiency in the Building	EIG	W	2	2	0	0	0	5
3135	Gender and Diversity: Success Factors for Companies	GUD	W	2	2	0	0	0	5
1118	Investment and Financing	FIN	S	3	1	0	0	0	5
1138	Power Electronics	LE	W	2	1	0	1	0	5
1192	Personnel and Organisation	PUO	S	3	1	0	0	0	5
1209	Product and Price Management	PPM	W	3	1	0	0	0	5

1086	Technical English 2	FSE2	S	0	4	0	0	0	5
6004	Textile Technologies	TEX	S	2	2	0	0	0	5
1267	Thermodynamics 1	TD1	S	2	2	0	0	0	5
1324	Circular Economy According to Cradle to Cradle	ZW	W	2	2	0	0	0	5
1287	State Space Control	ZRG	S	2	1	0	1	0	5

Appendix C: Module catalogue

for the study programme Renewable Energies B.Eng.

Industrial Plant Layout	21
Power Drive Technology	22
Automation Technology	24
Bachelor Thesis	25
Business Administration	26
Biochemistry and Microbiology*	28
Biogas and Biorefineries*	29
Chemistry	30
Decentralised Energy Systems	31
Efficient Illumination Technology	32
Electrical Energy Storage and Fuel Cells	34
Electrical Machines	35
Power Systems	37
Electronics	38
Electrical Engineering 1	39
Electrical Engineering 2	40
Electric Traction	42
Energy Efficiency in the Building	44
Building Automation	46
Gender and Diversity: Success Factors for Companies	48
Fundamentals of Energy Technology	50
Computer Science 1	51
Computer Science 2	53
Investment and Financing	55
Colloquium	57
Power Electronics	58
Mathematics 1	60
Mathematics 2	62
Metrology	64
Modern Energy Policy	65

Personnel and Organisation	66
Photovoltaics	68
Physics 1	69
Physics 2	71
Practical Project / Internship	73
Product and Price Management	74
Product Risk Management	75
Project 1	77
Project 2	78
Automatic Control Engineering	79
Renewable Energy Industry	80
Sensors	82
Technical English 1	84
Technical English 2	86
Textile Technologies	88
Thermal Use of Renewable Energies	89
Thermodynamics 1	91
Process Engineering*	93
Elective Module	94
Wind and Hydropower	95
Circular Economy According to Cradle to Cradle	97
State Space Control	99

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^{*}Translations of these module descriptions are currently not available.

	ustrial Plan	t Layout							APL	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	on:
101	0	150 h	5	4th o	r 6th se	em.	Annual (Summer	·)	1 sem	ester
1	Course:	1	Planned group si	zes	Scope	e	Actual of time / citeaching	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22	h
	Exercise		20 students		1	SCH	15	h	23	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	question	the solution. lents can defer	e a planning task This includes the ad the solutions.							
3	Systema producti systems	tic approach to on plants using and electrical	o plant planning g the example of energy generation construction and	f biogas n systen	plants	. Planni cially re	ng and pregenerative	ojecting of e energy gen	electrica neration	l energy systems.
	Forms of teaching:									
4		•								
	Lecture	and seminar								
	Lecture Participat	and seminar								
	Lecture Participat	and seminar tion requiremen None	2							
5	Participat Formal: Content:	and seminar tion requirement None None	2							
5	Participat Formal: Content: Forms of	and seminar tion requirement None None assessment:								
5	Participat Formal: Content: Forms of Written	and seminar tion requirement None None assessment: examination o	r oral examinatio	n						
5	Participat Formal: Content: Forms of Written Prerequis	and seminar tion requirement None None assessment: examination o ite for the aware	r oral examination		nt					
5 6 7	Participat Formal: Content: Forms of Written Prerequis Module	and seminar tion requirement None None assessment: examination of the award examination p	r oral examination of credit points:	sessme		nes)				
6	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati	and seminar tion requirement None None assessment: examination o ite for the award examination p on of the modul	r oral examination of credit points: ass and course as e (in the following	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica	and seminar tion requirement None None assessment: examination of the modulal Engineering	r oral examination of credit points:	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Manager	and seminar tion requirement None None assessment: examination of the award examination pon of the modulal Engineering ment B.Sc.	r oral examination of credit points: ass and course as e (in the following	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Manages Important	and seminar tion requirement None None assessment: examination of the award examination pon of the modulal Engineering ment B.Sc.	r oral examination of credit points: ass and course as e (in the following B.Eng., Renewal	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Manages Importan accordin	and seminar tion requirement None assessment: examination of the for the award examination proportion of the modulal Engineering ment B.Sc. ce of the grade to	r oral examination of credit points: ass and course as e (in the following B.Eng., Renewal	sessme	ogramn		d Industri	al Engineer	ing and	
5	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Managet Important accordin Module o	and seminar tion requirement None None assessment: examination of the award examination pon of the modulal Engineering ment B.Sc. ce of the grade of	r oral examination of credit points: ass and course as the course in the following being. Renewal for the final grade:	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7 8 9	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Managet Important accordin Module o	and seminar None None assessment: examination of the award examination proportion of the modulated Engineering ment B.Sc. ce of the grade to grade to grade to BRPO coordinator: Ing. Jan Bori	r oral examination of credit points: ass and course as the course in the following being. Renewal for the final grade:	sessme	ogramn		d Industri	al Engineer	ing and	
5 6 7 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Manages Important accordin Module of Prof. Dr Other info	and seminar None None None assessment: examination of the award examination proportion of the modulal Engineering ment B.Sc. are of the grade to BRPO proordinator: -Ing. Jan Boriormation: re will be annother the seminary of the semina	r oral examination of credit points: ass and course as the course in the following being. Renewal for the final grade:	sessmentstudy proble Energian	ogramn rgies B	Eng. an		_		subject
5 6 7 8 8	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Manages Important accordin Module of Prof. Dr Other info	and seminar None None assessment: examination of the award examination proportion of the modulated Engineering ment B.Sc. and the grade of the grad	r oral examination of credit points: ass and course as e (in the following B.Eng., Renewal for the final grade: s Loesenbeck	sessmentstudy proble Energian	ogramn rgies B	Eng. an		_		subject

1011	er Drive To	echnology							ATR	
ldent	rification per:	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the offer	Duratio	on:
1013		150 h	5	4th	or 6th s	emester	Annual (Summe	r)	1 sem	ester
I	Course:		Planned group s	sizes	Scop	e	Actual of time / conteaching	lassroom	Self-stud	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	- com of c - dete - carr	ontrol technology out the technology out the technology (digit	t converter-fed dr plogy timal controller p nnical realisation	aramete	ers of a	cascade	structure	in the freque	ency don	
	- Proj - Sele - Pos tran - Det Boo	ject planning ection of suita ition-speed-to sformation) ermination of le diagram an	dynamic requiren and dimensioning able machine - co orque cascade stru- f the controller pand their analogue a tion of electrical of	g of connector acture a cand digi	trolled combinated and its combined are with the	electric eations ontrol-te he help isation	drives chnical de	escription (I	-	s in the
Forms of teaching: Lecture, seminar-based teaching and laboratory exercises in small groups (3–4 participants)										
5	Participat	ion requiremen	nts:							
	Formal:	Non	ie							
	Content:	Mod	dule on Electrical	Machin	nes (105	59) shoul	ld have be	en successf	ully com	pleted
ó		assessment:								
			or oral examination	on						
7			rd of credit points:	00000	n#					
			pass and course a ale (in the following			nes)				
2			g B.Eng. and Ren							
8			for the final grade:		5151		,-			
		ce of the grade								
	Importance	g to BRPO	2							
)	Important accordin	-								
9	Important accordin Module c Prof. Dr.	g to BRPO oordinator: Ing. habil. K								
9	Importance accordin Module c	g to BRPO oordinator: Ing. habil. K								
9 10 11	Importance accordin Module c Prof. Dr. Other info	g to BRPO oordinator: Ing. habil. Kormation:		ginning	of the c	ourse.				

	and safety of electrical equipment. Study programme Renewable Energies, specialisation Energy Generation Systems: Elective subject
12	Language:
	German

Auto	omation Te	chnology								AT	
Ident	rification per:	Workload	l: C	Credits:	Study	/ semest	er:	Frequency	of the offer	Duration:	
1315	5	150 h	5		3rd s	sem.		Annual (Winter)		1 semester	
1	Course:		Planr	ned group s	sizes	Scope	e	Actual c time / cla teaching	assroom	Self-stud	ly
	Lecture		60 st	udents		2	SCH	30	h	45	h
	Tuition in	seminars	30 st	udents		1	SCH	15	h	22.5	h
	Exercise		20 st	udents		0	SCH	0	h	0	h
	Practical	or seminar	15 st	udents		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 str	udents		0	SCH	0	h	0	h
	either dis	screte or co	ontinuous s n of disci	signals. B ete-event	ased on control	the fund	damenta	ls of syster	loop contr ms theory, s ledge of th	skills for t	the desig
	- D au - Be in - H (A	ntomata, statehaviour of put/output euristic con	of discrete andard aut f determin automata ntrol desig step chains lesign of d	e-event sy omata, in istic and r and Petri n and imp s. iscrete-ev	stems by put/outp non-dete nets. plementa vent cont	deternut autor erminist ation of	ninistic a mata and ic auton the cont based or	and non-de d Petri nets omous aut trol law by	terministic omata, stan means of a of the contr	dard auto	omata,
4	Forms of	teaching:									
		with accom		eminar ex	xercises	and pra	cticals				
5		ion requiren									
	Formal:		one								
6	Content:	assessment:	one								
U		assessment: examinatio		ith prolim	inary ov	aminati	on				
7		ite for the av			mary ex	amman	OII				
′	•	examinatio		•	narv eva	minatio	on				
8		on of the mo									
J		l Engineer				-					
9		ce of the gra					ع الدارد د	·-			
	_	g to BRPO		<u> </u>							
		oordinator:									
10	Prof. DrIng. Dirk Weidemann										
10			Weidema	nn							
10	Other info	ormation:			ginning (of the co	ourse.				
	Other info	ormation: e will be a			ginning (of the co	ourse.				

Bac	helor Thesi	is							BA	
	tification	Workload:	Credits:	Stud	y semest	er:	Frequenc	y of the offer	Durati	on:
num 129	iber: 1	360 h	12	6tho	r 7th se	m.	each sen	nester	12 we	eeks
1	Course:		Planned group si	izes	Scop	e		contact classroom	Self-stu	dy
	Lecture		60 students		0	SCH	0	h	360	h
	Tuition in	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	technolo	nelor thesis is gy task.	usually an indepe		_					-
	written p		e subject matter	iii detai	ica acs	cription	s and exp	idilations an	d be pre	pared as
4	Forms of	teaching:								
5	Participat	ion requiremen	ts:							
	Formal:	None	e							
	Content:	Coor	rdinated topic from	m the st	udent's	special	subject ar	ea		
6	Forms of	assessment:								
7	Prerequis	ite for the awar	d of credit points:							
8	Apparati B.Eng, N	ive Biotechno Mechanical Er	le (in the following logy B.Sc., Electr ngineering B.Eng. and Managemen	rical En ., Mech	gineeri	ng B.En	g., Engine Renewabl	eering Comp le Energies I	uter Sci 3.Eng. a	ences nd
	-	ca of the grade	for the final grade:							
9	_	-								
9	accordin Module c	g to BRPO coordinator:	Zlar							
10	accordin Module o Prof. Dr	g to BRPO oordinator: Ing. Anton F	Klar							
	Module of Prof. Dr Other inf	g to BRPO coordinator: Ing. Anton Formation:	Clar Dunced at the beg	inning (of the c	ourse.				
10	Module of Prof. Dr Other inf	g to BRPO coordinator:Ing. Anton kormation: re will be annoted		inning (of the co	ourse.				

Busn	ness Admi	inistration							BW	
Identi numb	ification er:	Workload	l: Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:
1024		150 h	5	3rd o	or 5th s	em.	Annual (Winter)		1 seme	ster
1	Course:		Planned group	sizes	Scop	e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students	60 students		SCH	45	h	67.5	h
		seminars	30 students	30 students		SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervised self-study Learning outcomes/compet		60 students		0	SCH	0	h	0	h
3	can appl assess the	y business heir effects. Basic conc Overview and inform Corporate	ethods and tools for management instruction experts of business address of the entrepreneurination economy level goals and corporate expets of private and	ministrat	ion / ba	asic prineas of the	ciples of educe goods ec	a target-ori	ented man	nner an
4 5	Forms of Lecture,	teaching:	ased teaching with	case stud	lies / ca	se studio	es / exercis	es		
3	Formal:	non requirer	nents.							
6	Forms of	assessment:	en, combination exa	mination	nerfo	rmance	evaminatio	n or oral o	zaminatio:	n
7	Prerequis	ite for the a	ward of credit points:		i, perio	imance	CAMIMANO	n or orar e	xammati0	11
		examination		a study =	o orom	200				
0	Application of the module (in the following study programmes) Electrical Engineering B.Eng, Engineering Computer Sciences B.Eng., Mechanical Engineering							/lechanical	Engineeri	ing
8										
9	B.Eng. a Importan	and Renewa ce of the gra	able Energies B.Engade for the final grade	g.						
	B.Eng. a Importan accordin	nd Renewa	able Energies B.Engade for the final grade	g.						

Γ		Literature will be announced at the beginning of the course.
	12	Language:
		German

Dece	entralised F	Energy Syste	ems							DEC	
Ident numl	rification per:	Workload:	(Credits:	Study	y semest	er:	Frequency	of the offer	Duratio	on:
1042	2	150 h	3	5	5th s	em.		Annual (Winter)		1 seme	ester
1	Course:		Plan	ned group	sizes	Scope	e	Actual c time / cl teaching	assroom	Self-stuc	ly
	Lecture		60 s	60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 st	30 students		1	SCH	15	h	22.5	h
	Exercise		20 s	tudents		0	SCH	0	h	0	h
	Practical of	or seminar	15 st	tudents		1	SCH	15	h	22.5	h
	Supervise	d self-study	60 st	tudents		0	SCH	0	h	0	h
	- by stering (ess the re			c interr			odening de	occirci di is	200 011012
		and can asso	ess the re	eliability o					odening de	ocine and	
3	Contents:		ess the re						odening de		
3				eliability (of energy	supply	systems	S			
3	Structure Design a Working	e and function and structure machines for	on of the	eliability of the control of the con	energy n	arket (y systems power ex	s. kchange).	S.		
3	Structure Design a Working	e and function and structure machines for upply system	on of the	eliability of the control of the con	energy n	arket (y systems power ex	s. kchange).	S.		
	Structure Design a Working energy st Forms of	e and function and structure machines for upply system	on of the of centror comb	e German or ralised / doined heat	energy n ecentrali and pow	narket (sed ene	power ex rgy supp ration. F	s schange). oly system: Reliability	S.		
	Structure Design a Working energy st Forms of Lecture,	e and function and structure machines for upply system teaching:	on of the of centror comb	e German or ralised / doined heat	energy n ecentrali and pow	narket (sed ene	power ex rgy supp ration. F	s schange). oly system: Reliability	S.		
4	Structure Design a Working energy st Forms of Lecture,	e and function and structure machines for upply system teaching: seminar-base	on of the of cention combins eed teachents:	e German or ralised / doined heat	energy n ecentrali and pow	narket (sed ene	power ex rgy supp ration. F	s schange). oly system: Reliability	S.		
4	Structure Design a Working energy si Forms of Lecture, Participat	e and function and structure machines for upply system teaching: seminar-bassion requirement	on of the of centror combins ed teachents:	e German or ralised / doined heat	energy n ecentrali and pow	narket (sed ene	power ex rgy supp ration. F	s schange). oly system: Reliability	S.		
4	Structure Design a Working energy st Forms of Lecture, Participat Formal: Content:	e and function and structure machines fupply system teaching: seminar-basion requirement No No assessment:	on of the of centror combons seed teachents: ne	e German of ralised / doined heat	energy necentraliand pow	narket (seed ene	power ex rgy suppration. F	s. Acchange). Soly system: Reliability Ourse	s. and availab	oility of e	
5	Structure Design a Working energy st Forms of Lecture, Participat Formal: Content: Forms of Written of	e and function and structure machines fupply system teaching: seminar-basion requirem No No assessment: or oral exam	on of the of centror combins seed teachents: ne ne ination;	e German or ralised / doined heat	energy necentraliand powexercises	narket (seed ene	power ex rgy suppration. F	s. Acchange). Soly system: Reliability Ourse	s. and availab	oility of e	
4 5	Structure Design a Working energy si Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi	e and function and structure machines for teaching: seminar-basion requiremed No No assessment: or oral examite for the awards.	on of the of centror combins seed teachents: ne ne ination; ard of creations of the centror combined ination;	e German or ralised / do ined heat hing with or in each caredit points:	energy necentraliand pow	narket (seed energeneer geneer geneer prelimi	power ex rgy supp ration. F	s. Acchange). Soly system: Reliability Ourse	s. and availab	oility of e	
4567	Structure Design a Working energy si Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of	e and function and structure machines from teaching: seminar-basion requiremed No No assessment: or oral examite for the away examination	on of the of centror combins seed teachents: ne ne ination; ard of cre pass wi	e German or ralised / do ined heat hing with or rach care dit points:	energy necentraliand powexercises	narket (seed energeneer geneer geneer prelimi	power exactical conary exaction.	s. Acchange). Soly system: Reliability Ourse	s. and availab	oility of e	
5	Structure Design a Working energy su Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisis module of Application Electricae	e and function and structure machines from teaching: seminar-basion requiremed No No assessment: or oral examination on of the module Engineering	on of the of centror combins sed teachents: ne ne ination; ard of cre pass willule (in thing B.Eng	e German or ralised / doined heat in each care dit points: th preliming and Rer	energy necentrali and powers exercises as with mary exage study properties.	narket (seed energeneer geneer	power exactical conners)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	
4567	Structure Design a Working energy su Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of Application Electrica Importance	e and function and structure machines frupply system teaching: seminar-basion requiremed No No assessment: or oral examination on of the modern contract of the	on of the of centror combins sed teachents: ne ne ination; ard of cre pass willule (in thing B.Eng	e German or ralised / doined heat in each care dit points: th preliming and Rer	energy necentraliand powers exercises as with nary exage study properties.	narket (seed energeneer geneer	power exactical conners)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	
5 6 7 8 8	Structure Design a Working energy si Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of Application Electrica Important accordin	e and function and structure machines fupply system teaching: seminar-basion requiremed No No assessment: or oral examination on of the modul Engineering of the grading to BRPO oordinator:	on of the of centror combins seed teachents: ne ne ination; and of cre pass will ulle (in the grant B.Enge for the	e German of ralised / doined heat in each caredit points: th preliming and Rer final grade	energy necentraliand powers exercises as with nary exage study properties.	narket (seed energeneer geneer	power exactical conners)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	
4 5 6 7 8 9	Structure Design a Working energy si Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of Application Electrica Important accordin Module of Prof. Dr.	e and function and structure machines from teaching: seminar-basion requirements or oral examination on of the modul Engineering to BRPO oordinator: Ing. Jens H	on of the of centror combins seed teachents: ne ne ination; and of cre pass will ulle (in the grant B.Enge for the	e German of ralised / doined heat in each caredit points: th preliming and Rer final grade	energy necentraliand powers exercises as with nary exage study properties.	narket (seed energeneer geneer	power exactical conners)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	
4 5 6 7 8 9	Structure Design a Working energy st Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of Application Electrica Importance accordin Module of Prof. Dr. Other info	e and function of structure machines from teaching: seminar-basion requiremed No No assessment: or oral examination on of the model Engineering to BRPO operation: -Ing. Jens Hormation:	on of the of centror combins seed teachents: ne ne ination; ard of cre pass willule (in the grant B.Enge for the seed teachents).	e German or ralised / doined heat hing with or rach care dit points: th preliming and Rer final grade	energy necentraliand powers exercises as e with nary exage study properties of the control of th	narket (seed energer generation) prelimi mination rogramn Energie	power examples actical connes)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	
4 5 6 7 8 9	Structure Design a Working energy st Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequisi module of Application Electrica Importance accordin Module of Prof. Dr. Other info	e and function and structure machines for upply system teaching: seminar-basion requiremed No No assessment: or oral examination on of the model Engineering to BRPO coordinator: -Ing. Jens Hormation: e will be an	on of the of centror combins seed teachents: ne ne ination; ard of cre pass willule (in the grant B.Enge for the seed teachents).	e German or ralised / doined heat hing with or rach care dit points: th preliming and Rer final grade	energy necentraliand powers exercises as e with nary exage study properties of the control of th	narket (seed energer generation) prelimi mination rogramn Energie	power examples actical connes)	s. Achange). Oly systems Reliability ourse	s. and availab	oility of e	

Effic	ient Illumi	nation Techn	nology						ELT	
Identi numb	ification er:	Workload:	Credits:	Stud	y semest	er:	Frequency	of the offer	Duratio	n:
1050		150 h	5	5 6th se			Annual (Summer)		1 seme	ster
1	Course:		Planned group s	izes	Scop	e	Actual continue / classifications	assroom	Self-study	
	Lecture		60 students		2	SCH	30	h	45	h
		seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students	20 students		SCH	0	h	0	h
		or seminar	15 students		0	SCH	15	h	22.5	h
	Supervise	Supervised self-study 60 studen			0	SCH	0	h	0	h
2	Learning outcomes/competences:									
3		. The student	situated in the lights can classify the							
	- Pl - Li Pr - Lu El Lu - Li - M Pl - In	notometric maght sources: operties and aminaires: ements of ligaminaire requighting design easurement to notometric an telligent light	characteristic values tht control tirements and print to using simulation echnology: d radiometric par	ues of la nciples (n progra ameters	(e.g. incoms	loor and	outdoor lu		on sphere)
4	Forms of		. d 4 dain							
5		ion requiremen	ed teaching with e	ACICISE!	s anu pi	actical (ourse			
١	Formal:	Non								
	Content:	Non								
6	Forms of	assessment:								
			nation; in each ca	se with	prelimi	nary exa	amination p	performanc	e	
7			rd of credit points:		4					
0			pass and course as			222)				
8			ale (in the following	stuay p	rogramn	nes)				
0		ole Energies I	for the final grade:							
9		g to BRPO	101 the final grade:							
		g to DKPO								
10	Modula	oordinator:								
10			nwenzfeier-Hellka	amp						

12 Language:
German

Lice	ctrical Ener	gy Storage and	d Fuel Cells						EEB	
Iden	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duratio	n:
105	6	150 h	5	5th s	em.		Annual (Winter)		1 seme	ester
1	Course:	1	Planned group siz	es	Scope	e	Actual of time / cl	assroom	Self-stud	y
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	mass, pu to powe	basics of sele amped storage er and energy	cted storage techn , superconducting y storage. Applic ze systems.	magne	tic ener	rgy stora	ige). Class	ification of	storage a	ccording
	dimensioning of storage systems. Fuel cell systems, structure and classification of selected technologies.									
		•								
4	Forms of Lecture,	U	d teaching with ex	ercises	and pr	actical c	course			
	Lecture,	U	d teaching with ex	ercises	and pr	actical c	course			
	Lecture,	seminar-base	ts:	ercises	and pr	actical c	course			
5	Lecture, Participat Formal: Content:	seminar-basedion requiremen None None	ts:	ercises	and pr	actical c	course			
5	Lecture, Participat Formal: Content: Forms of	seminar-basedion requiremen None None assessment:	ts:							
5	Lecture, Participat Formal: Content: Forms of Written	seminar-basedion requiremen None None assessment: or oral examir	ts:					performanc	e	
5	Lecture, Participat Formal: Content: Forms of Written of Prerequise	seminar-basedion requiremen None None assessment: or oral examir ite for the award	ts: e e nation; in each case d of credit points:	e with j	prelimi			performanc	e	
5 6 7	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module	seminar-basedion requiremen None None assessment: or oral examir ite for the awar examination p	ts: e e e e e e e e e e e e e e e e e e e	e with j	prelimi	nary exa		performanc	e	
5	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati	seminar-based ion requiremen None None assessment: or oral examirite for the awar examination pon of the module	ts: e e e e e e e action; in each case d of credit points: eass and course ass le (in the following s	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electrica	seminar-based ion requirement None None assessment: or oral examinite for the award examination pon of the modulal Engineering	ts: e e nation; in each case d of credit points: eass and course ass le (in the following s B.Eng. and Renev	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
5 6 7	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Application Electrication	seminar-based ion requiremen None None assessment: or oral examinite for the awar examination pon of the modulal Engineering ce of the grade is	ts: e e e e e e e action; in each case d of credit points: eass and course ass le (in the following s	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electricat Important accordin	seminar-based ion requirement None None assessment: or oral examinite for the award examination pon of the modulal Engineering	ts: e e nation; in each case d of credit points: eass and course ass le (in the following s B.Eng. and Renev	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electrica Important accordin Module c	seminar-based ion requiremen None None assessment: or oral examirite for the aware examination pon of the modulal Engineering ce of the grade ig to BRPO	ts: e nation; in each case d of credit points: ass and course ass le (in the following s B.Eng. and Renev for the final grade:	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
5 6 7 8	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electrica Important accordin Module c	seminar-based ion requiremen None None assessment: or oral examinite for the awar examination pon of the modulal Engineering ce of the grade in g to BRPO oordinator: -Ing. Jens Hat-	ts: e nation; in each case d of credit points: ass and course ass le (in the following s B.Eng. and Renev for the final grade:	e with	prelimi nt ogramn	nary exa	amination	performanc	e	
6 7 8 9	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electricat Important accordin Module of Prof. Dr. Other info	seminar-based ion requiremen None None assessment: or oral examirite for the award examination pon of the modulal Engineering to BRPO coordinator: Jens. Jens Hardormation:	ts: e nation; in each case d of credit points: ass and course ass le (in the following s B.Eng. and Renev for the final grade:	e with personal study prowable l	prelimi nt rogramn Energie	nary exa nes) es B.Eng	amination	performanc	e	
6 7 8 9	Lecture, Participat Formal: Content: Forms of Written of Prerequis Module Applicati Electricat Important accordin Module of Prof. Dr. Other info	seminar-based ion requirement None None None assessment: or oral examination proportion of the modulal Engineering to BRPO coordinator: Jens Jens Hampton: The will be annothed to the semination: the will be annothed to the semination: the will be annothed to the semination of the	ts: e e nation; in each case d of credit points: eass and course ass le (in the following s B.Eng. and Renev for the final grade:	e with personal study prowable l	prelimi nt rogramn Energie	nary exa nes) es B.Eng	amination	performanc	e	

Elec	trical Mac	hines								EM		
Ident numl	ification per:	Workloa	d:	Credits:	Study	semes	ter:	Frequency	y of the offer	Duratio	on:	
1059)	150 h		5	3rd o	or 5th s	em.	Annual (Winter)		1 semester		
1	Course:		Pl	anned group s	sizes	Scop	e	Actual of time / cl	lassroom	Self-stud	dy	
	Lecture		60	students		2	SCH	30	h	45	h	
	Tuition in	n seminars	30	students		1	SCH	15	h	22.5	h	
	Exercise		20	students		0	SCH	0	h	0	h	
		or seminar		students		1	SCH		h	22.5	h	
		ed self-stud		students		0	SCH	0	h	0	h	
2	Learning Students	Learning outcomes/competences:										
	- ca - re	rcuit diag arry out th	rams, po e design ne steady	nematical des inter diagrar of electrical y-state and dy ntities	ns and lo machin	ocus cu es for 1	rves of o	electrical r nplex driv	nachines an e systems	d transfo	rmers	
	- D - M - S - Labora - M - S	irect curre lodern cor mall and s tory exerc leasureme hort-circui	ent mach ntrol and pecial m rises: nt of the it and no	r properties of ines, transfor regulation in totors for pre- characterist -load measur characterist	rmers, the nethods ecision e ics of a larement of	nree-ph for ele nginee DC ma of a tra	nase mac etrical m ring and chine nsforme	nachines information	on technolog	gy		
4	Forms of	teaching:										
	Lecture,	seminar-l	based tea	ching and la	boratory	exerc	ises in s	mall group	os (3–4 parti	cipants)		
5	Participa	tion require	ments:									
	Formal:	1	Vone									
	Content:		The basion	es of electric	al engin	eering	should h	ave been	successfully	complet	ted	
6		assessmen examinati		al examination	on							
7				credit points:								
	Module	examinati	on pass	and course a								
8				the following ing. and Ren				Ţ.				
9		ce of the gr		ne final grade:								
10		coordinator:										
-		. Ing. habi		Hofer								
11	Other inf	ormation:		ed at the beg	ginning o	of the c	ourse.					
				ent knowled				andling				

	and safety of electrical equipment
12	Language:
	German

Pov	ver Systems	S							ENE	
	ntification	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	1:
106	0	150 h	5	6th sem.		Annual (Summer)		1 semester		
1	Course:		Planned group siz	zes	Scope)	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students	30 students		SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	They can	n describe the	ne grid structure w structure of a conti nergy supply syste	rol syst						
3	Contents	•								
	and netv	vorks, Mains pon of electrical	ed network data (porotection and con I supply networks, components, hand	trol tec mains	hnolog freque	y. ncy regu	ılation, syn	nmetrical sl	nort-circui	
4	Forms of	Forms of teaching:								
•		_	d teaching with ex	ercises	and pr	actical o	ourse			
5		tion requiremen								
	Formal:	Non	e							
	Content:	Func	1 . 1 . 2 . 2			(1007)				
		1 0110	lamentals of Energ	gy Tecl	ınology	(1057)				
6		assessment:								
	Written	assessment: or oral examin	nation; in each cas					erformanc	e	
	Written Prerequis	assessment: or oral examinate for the awar	nation; in each cased of credit points:	e with	prelimi	nary exa		erformanc	e	
7	Written Prerequis Module	assessment: or oral examinate for the awar examination p	nation; in each cased of credit points:	e with	prelimi minatio	nary exa		erformanc	e	
7	Written Prerequis Module Applicati	assessment: or oral examinate for the awar examination properties on of the modu	nation; in each cased of credit points: bass with preliminate (in the following):	e with	prelimi minatio	nary exa		erformanc	e	
7	Written Prerequis Module Applicati Renewa	assessment: or oral examination properties on of the module of the Energies E	nation; in each cased of credit points: coass with preliminate (in the following states).	e with	prelimi minatio	nary exa		erformanc	e	
7	Written Prerequis Module Applicati Renewa	assessment: or oral examinate for the awar examination p on of the modu ble Energies E ce of the grade	nation; in each cased of credit points: bass with preliminate (in the following):	e with	prelimi minatio	nary exa		erformanc	e	
7 8 9	Written Prerequis Module Applicati Renewa Importan accordin	assessment: or oral examination properties on of the module of the Energies E	nation; in each cased of credit points: coass with preliminate (in the following states).	e with	prelimi minatio	nary exa		performance	e	
7 8 9	Written Prerequis Module Applicati Renewa Importan accordin Module of	assessment: or oral examinate for the awar examination properties on of the modulus ble Energies Examination properties of the grade ag to BRPO	nation; in each cased of credit points: bass with preliminate (in the following states). B.Eng. for the final grade:	e with	prelimi minatio	nary exa		performance	e	
7	Written Prerequis Module Applicati Renewa Importan accordin Module of	assessment: or oral examinate for the awar examination pon of the moduble Energies Ecc of the grade ag to BRPO coordinator:	nation; in each cased of credit points: bass with preliminate (in the following states). B.Eng. for the final grade:	e with	prelimi minatio	nary exa		performance	e	
10	Written Prerequis Module Applicati Renewa Importan accordir Module of Prof. Dr Other inf Literatur	assessment: or oral examination properties on of the modulus ble Energies Examination properties of the grade age to BRPO exoordinator: -Ing. Jens Hastormation: re will be annoted the second of the grade age to BRPO exoordinator: -Ing. Jens Hastormation:	nation; in each cased of credit points: bass with preliminate (in the following states). B.Eng. for the final grade:	e with	prelimi minatio ogramm	nary exa	amination <u>r</u>			ubject
7 8 9	Written Prerequis Module Applicati Renewa Importan accordir Module of Prof. Dr Other inf Literatur	assessment: or oral examination properties of the awar examination properties on of the modulate ble Energies Englished to BRPO coordinator:Ing. Jens Hastormation: re will be annotogramme Rer	nation; in each cased of credit points: bass with preliminate (in the following state). B.Eng. for the final grade: ubrock	e with	prelimi minatio ogramm	nary exa	amination <u>r</u>			ubject

Elec	etronics								ELR	
Iden	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the offer	Duration:	
1064	4	150 h	5	2nd	2nd sem.		Annual (Summer)		1 semester	
1	Course:		Planned group s	izes	Scop	e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	30 h		45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students	15 students		SCH	15	h	22.5	h
	Supervised self-study		60 students		0	SCH	0	h	0	h
2	Learning outcomes/competences:									
			design and analy	yse elec	tronic s	ystems.				
3	Contents:									
			chanism: metallic		-	ure and	doped sen	niconductor	S	
			of semiconductor	physics	;					
		iodes:								
			de types, models	, charac	teristic	s and dat	ta sheets			
		ectifier circui								
		oltage multip	lier							
		ansistors:		1	4 4 .		1 1.4.	.1		
			ng principle, type					sneets		
	Voltage stabilisation and constant current source with transistor									
	Operating point stabilisation and AC voltage amplifier Transistors as switches									
4	Forms of									
	Lecture,	seminar-base	d teaching with e	xercise	s and p	ractical c	course			
5		ion requiremer								
	Formal:	Non								
	Content:	Non	e							
6		assessment:						6		
			nation; in each ca	se with	prelim	nary exa	amination	performanc	e	
7	_		rd of credit points:							
0			pass and course as			nas)				
8		on of the modu ble Energies I	le (in the following	study p	rogrami	nes)				
9			for the final grade:							
J		g to BRPO	ioi the iliai grade.							
10		oordinator:								
10			nwenzfeier-Hellka	amp						
11	Other info			r						
			ounced at the beg	inning	of the c	ourse.				
12	Language									
12	88.									

Elec	trical Engi	neering 1							ET1	
Iden	tification ber:	Workload:	Credits:	Stud	Study semester:			of the offer	Duration:	
1074		150 h	5	1st s	sem.		Annual (Winter)		1 sem	ester
1	Course:		Planned group s	sizes	Scop	e	Actual c time / cla teaching	assroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	and can Contents		derive and appl	y soluti	ons to ta	asks set	for them.			
	Basic ph circuits, field, sta Practica - Voltag - Tempo	equivalent cir		_						
4	Forms of Lecture,		l teaching with 6	exercise	s and p	ractical o	course			
5	Participal Formal:	None None	,							
6	Forms of	assessment:	ation; in each ca	ace with	nrelim	inary ev	amination 1	performanc		
7	Prerequis	ite for the award	d of credit points: ass with prelimi					octioi mane	<u> </u>	
8	Applicati		e (in the following							
9	Importan		for the final grade:							
10	Module o	coordinator: Ing. Jens Hat	ıhrock							
11	Other inf Grundla	ormation:	otechnik by Ger	d Hageı	nann oi	Elektro	technik für	Bachelors	tudenten	by
12	Language German	e:								

Elec	trical Engi	neering 2							ET2	
Ident numl	ification per:	Workload:	Credits:	Stuc	ly semes	ter:	Frequency	y of the offer	Duration:	
1077	1	150 h	5	2nd	sem.		Annual (Summer)		1 semester	
1	Course:	<u>I</u>	Planned group s	sizes	Scop	e	Actual of time / cl	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	complex evaluate	calculation tasks for l	o calculate, evalua s, also graphically near alternating c electrical circuits a	They urrent	can inc	depende ee-phase	ntly formue current s	ilate, solve systems. Th	and com	parative
	- T A - C - E - S; - Pe - M - C	Iternating voomplex alternating voomplex alternation and power and encacticals: Iteration to be a second and a second a second and a second a second and a second a second and a second and a second and a second and a second a	electromagnetic fi oltage and alternati mating current calcover with alternati hree-phase system ergy with symmetr real passive composes of AC circuits	ing curreculation ng curres srical load	n rent ad					
			anced/unbalanced three-phase network							
4	Forms of		sed teaching with e	vorcica	ac and a	ractical :	course			
5		ion requirem		ACICISE	s and p	i actical (Jourse			
_	Formal:	No.								
	Content:		dule Electrical En	gineeri	ng 1 (10)74)				
6		assessment:		8		., .,				
	Written	or oral exam	ination; in each ca	se with	n prelim	inary ex	amination	performanc	e	
7			ard of credit points:							
			pass with prelimin							
8			lule (in the following	g study p	programi	nes)				
		ole Energies								
9	_	_	e for the final grade:							
10		g to BRPO								
10		oordinator:	[aubras]							
11	Other inf	-Ing. Jens H	laudrock							
11		gen der Elek	trotechnik by Gero	d Hage	mann oi	Elektro	technik fü	r Bachelors	tudenten	by

12 Language:
German

Elect	ric Tractio	on								ETR	
Identi numb	ification er	Worklo	oad:	Credits:	Study	semes	ter:	Frequency	y of the offer	Duration:	
1078		150 h		5	4th o	r 6th s	em.	Annual (Summe	r)	1 seme	ester
1	Course:		Pl	anned group s	sizes	Scop	e	Actual of time / conteaching	lassroom	Self-stud	ly
	Lecture		60) students		2	SCH	30	h	45	h
	Tuition in seminars Exercise		s 30	30 students		1	SCH	15	h	22.5	h
			20) students		0	SCH	0	h	0	h
	Practical	or semina		15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-stu	self-study 60 students			0	SCH	0	h	0	h
2	Learning	outcomes	/competer	ices:		+	_!	!			!
3	- re - ac a	alisticall lopt the e useful w	y assess t enormous ay	d the design he problems advantages stics (road gr	of storing and futu	ng elec re pros	trical eno	ergy electric ro	oad vehicles	and appl	y them in
	- E un - E - A (s - U - Pi	cological nits and t nergy sto lternative olar vehi seful tips ractical a	consumphe definited frage on resolution cles) for energible pplication	cles with constion formulation of environobile vehicles with hybriday-saving draws (ICE, Trans)	a for the onmental les (elected drives, iving sty	energy lly frie trocher fuel c	demand ndly mo nical and ells, ultra	bility I mechani acaps and	cal storage) regenerative	-	
4	Forms of Lecture,	_		aching and la	aboratory	exerc	ises in sı	mall group	os (3–4 parti	cipants)	
5	Participat	ion requi	rements:								
	Formal:		None								
	Content:			on Electrica		nes (10	59) and	Power Ele	ectrics (1138	3) should	have
5		assessme	nt:	Ť	•						
7				bination exame credit points:	mination	or ora	l examir	nation			
	Module	examina	tion pass	and course a							
8				the following Eng. and Ren		_		Ţ.			
9	Importan	ce of the g	grade for the					,			
	Laccordin	Importance of the grade for according to BRPO			-						
10	Module o										

11	Other information:
	Literature will be announced at the beginning of the course. Students must have sufficient knowledge and experience in the use and safety of electrical equipment
12	Language:
	German

Ener	Energy Efficiency in the Building											EIG	
number:		Workload:			Study	Study semester:			Frequency of the offer			on:	
		150 h			6th se	em.		Annual (Summer)			1 semester		
1	Course:		Pl	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-stu	dy		
	Lecture		60	60 students		2	SCH	30		h	45	h	
	Tuition in	n seminars 30		30 students		2	SCH	30		h	45	h	
	Exercise	rcise 2		20 students		0	SCH	0		h	0	h	
	Practical of	or seminar	15	students		0	SCH	0		h	0	h	
	Supervise	d self-study	60	students		0	SCH	0		h	0	h	

2 Learning outcomes/competences:

Students understand basic building physics processes and can apply them to the planning and evaluation of simple building structures. They know the methods for the energetic balancing of buildings according to legal regulations and can implement these using software on concrete examples. By means of practical exercises, they learn to use unknown standards for the processing engineering tasks. Furthermore, the students have knowledge of various certifications for buildings with increased energy or ecological requirements and can evaluate them with regard to the criteria of sustainability, feasibility and economic efficiency. Students understand the basic idea of model-based planning along the lines of Building Information Modelling (BIM) and can classify the influence on work processes in the construction industry.

3 Contents:

Determination of heat losses via the building envelope

- Calculation of the U-value
- Thermal bridges

Avoidance of damage to building elements (DIN 4108-2, Glaser method)

- Condensation inside building elements and on surfaces
- Mould criterion

Law for saving energy and using renewable energy for heating and cooling in buildings (Building Energy Law – GEG)

- Calculation / requirements according to GEG/ DIN V 18599
- · Energy demand
- Building supply HVAC (heating/cooling/air conditioning) according to DIN V 18599
- Software introduction

Use of renewable energies according to GEG

Summer thermal insulation (DIN 4108-2)

Increased requirements for the quality of buildings

- KfW, DGNB, BREEAM, LEED, municipal requirements/ energy guidelines
- C2C inspired buildings
- Alternative materials

	Basics BIM (dig	italisation, professional fields, innovations)
4	Forms of teaching:	
	Lecture, seminar	-based teaching
5	Participation requi	rements:
	Formal:	
	Content:	
6	Forms of assessme	nt:
	Term paper, writ	ten examination or oral examination
7	Prerequisite for the	e award of credit points:
	Module examina	tion pass
8	Application of the	module (in the following study programmes)
	Renewable Energ	gies B.Eng.
9	Importance of the	grade for the final grade:
	according to BR	90
10	Module coordinate	or:
	Prof. DrIng. Ev	a Schwenzfeier-Hellkamp
11	Other information:	
	Literature will be	e announced at the beginning of the course.
12	Language:	
	German	

Bui	ding Auto	mation								GAT	
Iden	tification	Workloa	ad:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:
	1095 150			5	4th o	r 6th semester		Annual (Summer)		1 semester	
1	Course:	Pla		Planned group sizes		Scope		actual contact time / classroom		Self-study	
	Lecture		60	60 students		2	SCH	teaching 30 h		45	h
	Tuition in seminars Exercise Practical or seminar			30 students		2	SCH	30	h	45	h
			20	0 students		0	SCH	0	h	0	h
			1:	5 students		0	SCH	0	h	0	h
	Supervise	ed self-stud	ly 60	0 students		0	SCH	0	h	0	h
	Interruev	es are app	горпис	for the respec	arve app	nicutio	11,				
3	•	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi	ies and I nents for ventilation principle insors and controlle ims, prot rfaces, un ility, aml	nucture of buil imits of energe human use: con, air conditions, characterist d actuators; user types, optime cocols, network sability bient assisted es: Standards,	gy efficients of the comfort, to oning: the curve biquitour is ation white comparison of the compariso	ency the pollutation passed des sus/pervof enerompute	ants, etc. evices (a asive co rgy use r system	also for the mputing as, building	use of rene	ent system	S
3	Forms of	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi Overarch	ies and I nents for ventilation principle insors and controlle ims, prot rfaces, un ility, aml	imits of energent human use: con, air conditions, characteristic dactuators; user types, optimizations, network sability bient assisted	gy efficients of the comfort, to oning: the curve biquitour is ation white comparison of the compariso	ency the pollutation passed des sus/pervof enerompute	ants, etc. evices (a asive co rgy use r system	also for the mputing as, building	use of rene	ent system	S
4	Forms of Lecture,	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi Overarch	ies and lanents for ventilation or inciple on sors and controlle ons, proterfaces, untility, ambigging topic	imits of energent human use: con, air conditions, characteristic dactuators; user types, optimizations, network sability bient assisted	gy efficients of the comfort, to oning: the curve biquitour is ation white comparison of the compariso	ency the pollutation passed des sus/pervof enerompute	ants, etc. evices (a asive co rgy use r system	also for the mputing as, building	use of rene	ent system	S
	Forms of Lecture,	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi Overarch f teaching: , seminar tion require	ies and la nents for ventilation principle msors and controlle ms, protesting, ambiguity, ambiguity, ambiguity, ambiguity, ambiguity topic ements:	imits of energent human use: con, air conditions, characteristic dactuators; user types, optimizations, network sability bient assisted	gy efficients of the comfort, to oning: the curve biquitour is ation white comparison of the compariso	ency the pollutation passed des sus/pervof enerompute	ants, etc. evices (a asive co rgy use r system	also for the mputing as, building	use of rene	ent system	S
4	Forms of Lecture,	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi Overarch Teaching: , seminar tion require	ies and I nents for ventilatio principle nsors an controlle ms, prot rfaces, u ility, aml ing topic	imits of energent human use: con, air conditions, characteristic dactuators; user types, optimizations, network sability bient assisted	gy efficience of the composition of the curve of the curv	ency the pollutation pollutation of each of ea	ants, etc. evices (a asive co rgy use r system aomes andard di	also for the mputing as, building iagrams for ering (1235	management planning a	ent system	nentation
4	Forms of Lecture, Participa Formal:	Definition Possibilit Requirem Heating, physical p Use of se Control, o Bus syste User inter Accessibi Overarch Teaching: , seminar tion require	ies and I nents for ventilatio principle nsors an controlle ms, prot rfaces, u ility, aml ing topic	imits of energy human use: con, air conditions, characterist dactuators; user types, optime ocols, networksability bient assisted es: Standards,	gy efficience of the composition of the curve of the curv	ency the pollutation pollutation of each of ea	ants, etc. evices (a asive co rgy use r system aomes andard di	also for the mputing as, building iagrams for ering (1235	management planning a	ent system	nentation
4 5	Forms of Lecture, Participa Formal: Content:	Definition Possibilit Requirem Heating, physical p Use of se Control, of Bus syste User inter Accessibit Overarch f teaching: seminar tion require	ies and I nents for ventilatio principle nsors an controlle ms, prot rfaces, u ility, aml ing topic ements: None Compute Technolout:	imits of energy human use: con, air conditions, characterist dactuators; user types, optime ocols, networksability bient assisted es: Standards,	gy efficiency of the composition of the curve of the curv	ency the pollutation pollutation of each of ea	ants, etc. evices (a asive co rgy use r system aomes andard di	also for the mputing as, building iagrams for ering (1235	management planning a	ent system	nentation
4 5	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequise	Definition Possibilit Requirem Heating, physical p Use of se Control, c Bus syste User inter Accessibi Overarch f teaching: , seminar tion require f assessmen examination	ies and I nents for ventilatio principle nsors an controlle ms, prot rfaces, u ility, aml ing topic ements: None Compute Technolo it: ion or or award of	imits of energy human use: con, air conditions, characterist dactuators; user types, optimizations, network sability bient assisted as: Standards, er Science 1 (ogy (1097), S	gy efficiency of the composition of the curve of the curv	ency the pollutation pollutation of each of ea	ants, etc. evices (a asive co rgy use r system aomes andard di	also for the mputing as, building iagrams for ering (1235	management planning a	ent system	nentation

	Engineering Computer Sciences B.Eng and Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Jörn Loviscach
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	der and Di	· cisity · succe	ess Factors for Co	mpanie	S				GUD		
Ident	ification per:	Workload:	Credits:	Study	y semes	ter:	Frequenc	y of the offer	Durati	Duration:	
3135		150 h	5	5th s	sem.		Annual (Winter)		1 semester		
1	Course:	1	Planned group s	anned group sizes		e	Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2	SCH	30	h	45	h	
		n seminars	30 students		2	SCH	30	h	45	h	
	Exercise				0	SCH	0	h	0	h	
		or seminar	15 students		0	SCH	0	h	0	h	
	Supervised self-study		60 students		0	SCH	0	h	0	h	
2	Learning The stud	outcomes/comp	petences:								
	•	know the term diversity/dive know legal pr Directive, Ge- are sensitised independently business envir are able to inc gender mainst professional p are familiar w management a implementation	lependently colle treaming and div	ontext of tement A geneity otyping a ect relev- ersity m ries and this, are	Egende ct) in the cand car and car ant info anagen approa able to	r and diversity and development and aches in a development aches i	versity (e.g. e context. o ideas for on establito assess the current o concepture.	possible ch ished conceptheir relevant discourse cal ideas for	Discrimination of the control of the	the as	
3	•	Definitions ar Concepts and mainstreamin Legal basis ar Discriminatio Subjective and Possible appro- selected areas	and delimitation of approaches to edgy) and political influe in Directive, Gen- d social values, a boaches for taking of business (man- ne sustainable int	ences (e. eral Equ ttitudes diversing, roduction	g. EU and produce produce of here	Anti-Disatment A ejudices acteristic t develo	actimination act (Germanin the concest (e.g. gerpment, huversity ma	on Directive an abbreviati text of diver ander and age man resource	, Genera ion: AG rsity e) into ac	l Anti- G))	
4	•	Case studies a	and application ex	xamples		Justices					
4	Forms of	Case studies a	and application ex	•			-	of seminar	paper		
5	Forms of Lecture,	Case studies a	d teaching, prese	•			-	of seminar	paper		

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

	damentals	of Energy	Technol	logy						GET	
Iden	tification ber:	Workloa	ad:	Credits:	Study	y semes	ter:	Frequenc	y of the offer	Duratio	on:
109′	7	150 h		5	3rd s	sem.		Annual (Winter)		1 seme	ester
1	Course:	1	Pla	anned group	sizes	Scop	e	Actual time / c	lassroom	Self-stud	ly
	Lecture		60	students		2	SCH	30	h	45	h
	Tuition in	n seminars	30	students		1	SCH	15	h	22.5	h
	Exercise		20	students		0	SCH	0	h	0	h
	Practical	or seminar	15	students		1	SCH	15	h	22.5	h
	Supervise	ed self-stud	ly 60	students		0	SCH	0	h	0	h
3		and can be		e reflected and explaine		ctured.	The bas	sic circuit	s of the pov	wer elect	ronics ar
3	Design distribut network	of transm ion, calcu calculati	lation of on softw	nd distributi electrical e vare. Fundar	energy ne	etworks	with the ctrical m	e method: achines,	s of network	analysis	s and wit
			asic pow	er electroni			wer engn	neering.			ciccuoni
4	Forms of	teaching:	vasie pow	er electroni			wer engi	incering.			
4		_	-	er electroni	c circuits	s in pov					crections
	Lecture	_	nar-based		c circuits	s in pov					Ciccuom
	Lecture	and semir	nar-based		c circuits	s in pov					Ciccus
	Lecture Participat Formal: Content:	and semir	nar-based ements: None Confiden analysis.		c circuits	s in pov	d practic	cal course	nt in the use	of netwo	
5	Participal Formal: Content:	and semir	nar-based ements: None Confiden analysis.	I teaching w	ith exerc	cises an	d practic	cal course			
5	Lecture Participal Formal: Content: Forms of Written	and semir tion require (a) assessmen or oral ex	nar-based ements: None Confiden analysis. it: aminatio	I teaching w it in complex n; in each ca	ith exerce x compu	cises an	d practic	cal course			
5	Participal Formal: Content: Forms of Written Prerequis	and semir tion require (a) assessmen or oral ex site for the	nar-based ements: None Confiden analysis. at: aminatio award of a	I teaching weat in complex	ith exerce x compu	eises an	d practic	cal course			
5 6	Lecture Participat Formal: Content: Forms of Written Prerequis Module	and semir tion require a assessmen or oral ex site for the examinati	nar-based ements: None Confiden analysis. it: aminatio award of a	I teaching went in complexin; in each cacredit points:	rith exerce x computes ase with	eises an	d practic	cal course			
5 6	Participat Formal: Content: Forms of Written Prerequis Module Applicati	and semir tion require a assessmen or oral ex site for the examination of the n	nar-based ements: None Confiden analysis. at: aminatio award of a ion pass a nodule (in	I teaching we to in complex the complex to the comp	rith exerce x computes ase with	eises an	d practic	cal course			
5 6 7	Participate Formal: Content: Forms of Written Prerequise Module Applicati	and semiration required assessment or oral exemination of the numble Energy	nar-based ements: None Confiden analysis. at: aminatio award of a ion pass y nodule (in	I teaching we to in complex the complex to the complex the complex the following g.	ith exerces a compute asse with inary exage study properties.	eises an	d practic	cal course			
5 6 7	Participate Formal: Content: Forms of Written Prerequise Module Application Renewal Importan	and semir tion require assessmen or oral ex site for the examination of the noble Energy ce of the gr	nar-based ements: None Confiden analysis. it: aminatio award of a ion pass y nodule (in ies B.Eng rade for th	I teaching we to in complex the complex to the comp	ith exerces a compute asse with inary exage study properties.	eises an	d practic	cal course			
55 66 77 88	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Renewal Importan accordin	and semiration required assessment or oral examination of the number of the gray to BRP	nar-based ements: None Confiden analysis. it: aminatio award of o ion pass y nodule (in ies B.Eng rade for th	I teaching we to in complex the complex to the complex the complex the following g.	ith exerces a compute asse with inary exage study properties.	eises an	d practic	cal course			
6 7 8 9	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Renewal Importan accordin Module of	and semiration required assessment or oral examination of the number of the graph o	nar-based ements: None Confiden analysis. it: aminatio award of a ion pass y nodule (in ies B.Eng rade for th O	n; in each cacredit points: with prelimithe followings.	ith exerces a compute asse with inary exage study properties.	eises an	d practic	cal course			
5 6 7 8 9	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Renewal Importan accordin Module of Prof. Dr	and semiration required assessment or oral examination of the number of the gray to BRP coordinator. Ing. Jan	nar-based ements: None Confiden analysis. it: aminatio award of a ion pass y nodule (in ies B.Eng rade for th O	I teaching we to in complex the complex to the complex the complex the following g.	ith exerces a compute asse with inary exage study properties.	eises an	d practic	cal course			
5	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Renewal Importan accordin Module of Prof. Dr	and semiration required assessment or oral experience of the graph to BRP coordinator. Ing. Jan ormation:	nar-based ements: None Confiden analysis. it: aminatio award of a ion pass y nodule (in ies B.Eng rade for th O	n; in each cacredit points: with prelimithe following. ne final grade	ith exerce x compute asse with inary example g study process.	sin poverises and ting, reprelimentation	d practic	cal course			
5 6 7 8 9	Lecture Participat Formal: Content: Forms of Written Prerequis Module Applicati Renewal Importan accordin Module of Prof. Dr	and semiration required assessment or oral exemination of the number of the gray to BRP coordinator. -Ing. Jan formation: re will be	nar-based ements: None Confiden analysis. it: aminatio award of a ion pass y nodule (in ies B.Eng rade for th O	n; in each cacredit points: with prelimithe followings.	ith exerce x compute asse with inary example g study process.	sin poverises and ting, reprelimentation	d practic	cal course			

Con	nputer Scie	ence I							INF1	
Iden num	tification	Workload:	Credits:	Study	semeste	er:	Frequency	of the offer	Duratio	on:
110′		150 h	5	3rd se	em.		Annual (Winter)		1 seme	ester
1	Course:		Planned group s	izes	Scope	<u> </u>	Actual c time / cli teaching	assroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
3	Contents		he basics and his	tory of c	ompute	er scien	ce			
3	•	Overview of t Structure and Dealing with Basic number Encoding of c Basic constru- and compound Design of algo	functioning of a an integrated dev representations (characters and stricts of procedural d data types, contorithms, also with	digital corelopment (integers ings program trol instr	ompute at envir , floatin aming i uctions	onment onment ng point n a lang , etc.)	and their auge like (C (primitive	2	
33	•	Overview of t Structure and Dealing with a Basic number Encoding of c Basic constru- and compound Design of algo- programme flaces and sea Functions of t input/output of	functioning of a an integrated dev representations (characters and stri- cts of procedural d data types, cont orithms, also with ow charts	digital corelopment (integers ings program trol instruction aids survey for material for hand	ompute at envir , floatin aming i uctions ch as st	onment ong point n a lang , etc.) tructure tical op	and their (uage like (C (primitive	ę.	
	Forms of	Overview of the Structure and Dealing with a Basic number Encoding of the Basic construction of	functioning of a an integrated dev representations (characters and stri- cts of procedural d data types, cont orithms, also with ow charts arch for errors the standard libration the screen and	digital corelopment (integers ings program trol instruction aids surry for material for handes	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
4	Forms of Lecture, course	Overview of the Structure and Dealing with a Basic number Encoding of the Basic construction of	functioning of a an integrated development of the characters and structs of procedural d data types, contourithms, also withow charts arch for errors the standard libration the screen and mory requirement d teaching, practical contouries and the contouries arch for the screen and the contouries arch for the screen and the contouries arch for the screen and the contouries architectures are the contouries architectures architecture architectures ar	digital corelopment (integers ings program trol instruction aids surry for material for handes	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
4	Forms of Lecture, course	Overview of t Structure and Dealing with Basic number Encoding of c Basic construe and compound Design of algo programme fl Avoid and sea Functions of t input/output of Dynamic men teaching: seminar-base tion requiremen	functioning of a an integrated development of the control of the c	digital corelopment (integers ings program trol instruction aids surry for material for handes	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
4	Forms of Lecture, course Participal Formal:	Overview of t Structure and Dealing with Basic number Encoding of c Basic construe and compound Design of algo programme fla Avoid and sea Functions of t input/output of Dynamic men teaching: seminar-base tion requirement None None	functioning of a an integrated development of the control of the c	digital corelopment (integers ings program trol instruction aids surry for material for handes	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
4	Forms of Lecture, course Participal Formal: Content:	Overview of t Structure and Dealing with Basic number Encoding of c Basic construe and compound Design of algorogramme fla Avoid and sea Functions of t input/output of Dynamic men teaching: seminar-base tion requirement None assessment:	functioning of a an integrated development of the control of the c	digital corelopment (integers ings program trol instruction aids surry for material for handles ical program trol program trol instruction aids surry for material for handles ical program trol instruction aids surry for material for handles ical program trol instruction aids surry for material for handles ical program trol instruction aids and instruction aids are instruction at the surround trol instruction and instruction are instruction at the surround trol instruction and instruction are instruction and instruction are instruction at the surround trol instruction are instruction at the surround trol instruction at the surround trol instruction are instruction at the surround trol	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
5	Forms of Lecture, course Participal Content: Forms of Written	Overview of t Structure and Dealing with Basic number Encoding of c Basic construct and compound Design of algorogramme fle Avoid and sea Functions of t input/output of Dynamic men teaching: seminar-base tion requiremen None assessment: examination of	functioning of a an integrated development of the actions of the action of the	digital corelopment (integers ings program trol instruction aids surry for material for handles ical program trol program trol instruction aids surry for material for handles ical program trol instruction aids surry for material for handles ical program trol instruction aids surry for material for handles ical program trol instruction aids and instruction aids are instruction at the surround trol instruction and instruction are instruction at the surround trol instruction and instruction are instruction and instruction are instruction at the surround trol instruction are instruction at the surround trol instruction at the surround trol instruction are instruction at the surround trol	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
4 5	Forms of Lecture, course Participal Formal: Content: Forms of Written Prerequise	Overview of t Structure and Dealing with Basic number Encoding of c Basic construe and compound Design of algorogramme flexible Avoid and sea Functions of t input/output of Dynamic men teaching: seminar-base None assessment: examination of the for the awar	functioning of a an integrated development of the standard libration the screen and mory requirement detaching, practicular tests: Continuous continuou	digital corelopment (integers ings program trol instruction aids survey for material for hands) ical program trol instruction aids survey for material for hands survey for material program for hands survey for material program for hands survey for material for hands survey for hands survey for material for hands survey for hands survey for material for hands survey for	ompute at envir , floatin aming i uctions ch as st athema lling fil	onment ng point n a lang , etc.) tructure tical op-	and their quage like (diagrams a erations, fo	C (primitive		ractical
3 4 5 6 7 8	Forms of Lecture, course Participal Formal: Content: Forms of Written Prerequise Module	Overview of t Structure and Dealing with Basic number Encoding of c Basic construe and compound Design of algo programme fl Avoid and sea Functions of t input/output o Dynamic men teaching: seminar-base tion requiremen None assessment: examination of site for the awar examination p	functioning of a an integrated development of the actions of the action of the	digital corelopment (integers ings program trol instruction aids survey for market for handles) ical program trol instruction aids survey for market for handles ical program trol instruction handles ical program trol instruction are seen to be a seen trol in tro	ompute at envir , floatin aming i uctions ch as so athema alling fil	onment ng point n a lang , etc.) tructure tical ope	and their quage like (diagrams a erations, fo	C (primitive		practical

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

Con	puter Scie								INF2		
Ident	ification	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duratio	on:	
1111		150 h	5	4th s	4th sem.			Annual (Summer)		1 semester	
1	Course:		Planned group s	sizes	Scope	2	Actual c time / cl teaching	assroom	Self-stuc	ly	
- -	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h	
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h	
	inspect s	software for er	t-oriented design rors in a method	ical fash	ion.	take col	imnon sou	ices of emo	as iiito ac	count an	
3	Contents										
3	•	Theory and prolanguage using Handling of a graphical usern Event-oriented Graphical desured Using existing Support for standling Error handling	d programming ign tools, for exa g class libraries, i rings, files and stiners	ems pred elopment ample UI in particu treams	lomina t enviro ML cla ular the	ntly from onment, ss diagra respect	n the techr in particul	ical field ar an editor	for build		
	Forms of Lecture,	Theory and prolanguage using Handling of a graphical user Event-oriented Graphical des Using existing Support for standling Generic contate Error handling Basic object-of teaching: seminar-base	g example proble n integrated deve interfaces d programming ign tools, for exa g class libraries, i rings, files and st iners g, exceptions oriented software d teaching, practi	ems pred elopment ample UI in particu treams design p	dominant environment environme	ntly from onment, ss diagra respect	n the techr in particul	ical field ar an editor	for build		
3 4 5	Forms of Lecture, Participal Formal:	Theory and prolanguage using Handling of a graphical user Event-oriented Graphical des Using existing Support for standling Basic object-of teaching: seminar-base tion requirement	g example proble n integrated dever interfaces d programming ign tools, for exa g class libraries, i rings, files and st iners g, exceptions oriented software d teaching, practi tts:	ems predelopment ample UI an particulareams design p	dominant environment environme	ntly from onment, ss diagra respect	n the techr in particul	ical field ar an editor	for build		
4	Forms of Lecture, Participal Formal: Content:	Theory and prolanguage using Handling of a graphical user Event-oriented Graphical des Using existing Support for standling Basic object-oriented Error handling Basic object-oriented Event-oriented Error handling Basic object-oriented Event	g example proble n integrated dever interfaces d programming ign tools, for exa g class libraries, i rings, files and st inners g, exceptions oriented software d teaching, practi	ems predelopment ample UI an particulareams design prical cour	dominant environment environme	ntly from onment, ss diagra respect	n the techr in particul	ical field ar an editor	for build		
4 5	Forms of Lecture, Participal Formal: Content: Forms of Written	Theory and prolanguage using Handling of a graphical user Event-oriented Graphical des Using existing Support for standling Basic object-oriented Error handling Basic object-oriented Event-oriented Error handling Basic object-oriented Event	g example proble n integrated dever interfaces d programming ign tools, for exa g class libraries, i rings, files and st iners g, exceptions oriented software d teaching, practi	ems predelopment ample UI an particulareams design prical cour	dominant environment environme	ntly from onment, ss diagra respect	n the techr in particul	ical field ar an editor	for build		
4 5 6	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise module	Theory and prolanguage usin Handling of a graphical user Event-oriented Graphical des Using existing Support for st Generic conta Error handling Basic object-oriented Event-oriented Error handling Basic object-oriented Event Eve	g example proble n integrated deve interfaces d programming ign tools, for exa g class libraries, i rings, files and st inners g, exceptions oriented software d teaching, practi tts: e uputer Science 1 (or oral examination d of credit points: wass and course as	ems predelopment ample Unit particular ams design prical courtical	lominal t environ ML clas ular the	ss diagra respect	n the techr in particul	ical field ar an editor	for build		
4 5 6	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise module Application	Theory and prilanguage usin Handling of a graphical user Event-oriented Graphical des Using existing Support for st Generic contal Error handling Basic object-off teaching: seminar-base tion requirement None Communication of assessment:	g example proble n integrated dever interfaces d programming ign tools, for exa g class libraries, i rings, files and st inners g, exceptions oriented software d teaching, practi tts: e puter Science 1 (or oral examination d of credit points: cass and course as le (in the following	ems predelopment ample Unit particular ams design prical courtical	lominal t environ ML clas ular the	ss diagra respect	n the techr in particul	ical field ar an editor	for build		
4 5 6	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequise module Applicati Renewal	Theory and prolanguage using Handling of a graphical user Event-oriented Graphical des Using existing Support for standling Basic object-of teaching: seminar-base tion requirement None Commander Reamination of the module ble Energies E	g example proble n integrated dever interfaces d programming ign tools, for exa g class libraries, i rings, files and st inners g, exceptions oriented software d teaching, practi tts: e puter Science 1 (or oral examination d of credit points: cass and course as le (in the following	ems predelopment ample Unin particulareams design prical courtical	lominal t environ ML clas ular the	ss diagra respect	n the techr in particul	ical field ar an editor	for build		

10	Module coordinator:
	Prof. Dr. rer. nat. Jörn Loviscach
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	ment and	l Financing							FIN	
Identifi numbe	ication r:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duratio	on:
1118		150 h	5	2nd, sem.	4th or	6th	Annual (Summer)		1 seme	ester
1	Course:		Planned group s	izes	Scope	e e	Actual co		Self-stud	ly
-	Lecture		60 students		3	SCH	45	h	67.5	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
			They are able to ty of the respective				ng costs ar	nd make j	ustified (decision
3										
_	Contents:									
			s of investment a	and finar	ncing					
	•	Basic concept	s of investment a		_					
	•	Basic concept Methods of st		alculatio	on					
	•	Basic concept Methods of st Methods of dy	atic investment c	alculatio	on					
	•	Basic concept Methods of st Methods of dy Forms of exte Forms of inter	atic investment c	alculatio	on					
4	Forms of	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching:	atic investment control investment control investment rnal financing rnal financing	alculatio	on					
4	Forms of Lecture,	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base	atic investment caynamic investment rnal financing rnal financing d teaching	alculatio	on					
4 5	Forms of Lecture,	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching:	atic investment caynamic investment rnal financing rnal financing d teaching	alculatio	on					
4 5	Forms of Lecture,	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Kno	atic investment convenance investment representations of teaching	alculation calcul	on ation	odule Ge	eneral Busin	ness Admir	nistration	(1002
4 5	Forms of Lecture, Participat Formal: Content:	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen	atic investment convenance investment representations of teaching	alculation calcul	on ation	odule Ge	neral Busin	ness Admir	nistration	(1002
5	Forms of Lecture, Participal Formal: Content:	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, of	atic investment caynamic investment real financing real financing deteaching ts: wledge of the core ()24)	alculation calcul	on ation					
4 5	Forms of Lecture, Participat Formal: Content:	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, ite for the awar	atic investment caynamic investment real financing real financing deteaching tts: wledge of the core (24) combination exart dof credit points:	alculation calcul	on ation					
5	Forms of Lecture, Participat Formal: Content: Forms of Written Prerequis Module	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, of ite for the awar examination p	atic investment caynamic investment real financing real financing deteaching ts: wledge of the corporation example of credit points: bass	alculation alculation tents of	the mo	rmance 6				
4 5	Forms of Lecture, Participal Formal: Content: Forms of Written Prerequis Module Applicati Engineer	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, ite for the awar examination p on of the modu ring Computer	atic investment caynamic investment real financing real financing deteaching tts: wledge of the core (24) combination exart dof credit points:	alculation t calculation	the mo	rmance e	examinatio	n or oral ex	xaminatio	on
4 5 <u>-</u>	Forms of Lecture, Participat Formal: Content: Forms of Written Prerequis Module Applicati Enginee: Manager	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, ite for the awar examination p on of the modu ring Computer ment B.Sc.	atic investment convince investment convince investment recognition in the second recognition in	alculation nt calcul ntents of mination s study pr	the mo	rmance e	examinatio	n or oral ex	xaminatio	on
4 5 <u> </u>	Forms of Lecture, Participat Formal: Content: Forms of Written Prerequis Module Applicati Enginee: Manager Important	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, of ite for the awar examination pon of the moduring Compute ment B.Sc. ce of the grade	atic investment companies investment companies investment representations of teaching the constant of teaching the constant of	alculation nt calcul ntents of mination s study pr	the mo	rmance e	examinatio	n or oral ex	xaminatio	on
4 5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Written Prerequise Module Applicati Engineer Manager Importance according	Basic concept Methods of st Methods of dy Forms of exte Forms of inter teaching: seminar-base ion requiremen Know or 10 assessment: examination, ite for the awar examination p on of the modu ring Computer ment B.Sc.	atic investment convince investment convince investment recognition in the second recognition in	alculation nt calcul ntents of mination s study pr	the mo	rmance e	examinatio	n or oral ex	xaminatio	on
4 5	Forms of Lecture, Participate Formal: Content: Forms of Written Prerequise Module Applicati Engineer Manager Important accordin Module of	Basic concept Methods of st Methods of dy Forms of exte Forms of interteaching: seminar-base ion requiremen Known or 10 assessment: examination, of ite for the awar examination pon of the modu ring Computement B.Sc. ce of the grade g to BRPO oordinator:	atic investment convince investment convince investment recognition in the second recognition in	nt calculation transfer of mination study program, Renew	the mo	rmance e	examinatio	n or oral ex	xaminatio	on

	Renewable Energies study programme: Elective module
12	Language:
	German

2011	oquium								KOL	
Ident	tification	Workload:	Credits:	Study	semest	er:	Frequenc	y of the offer	Duratio	on:
1290		90 h	3	6th o	r 7th se	em.	each sen	nester		
1	Course:		Planned group size	zes	Scope	e	Actual of time / c	lassroom	Self-stud	dy
	Lecture		60 students		0	SCH	0	h	90	h
	Tuition in	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	thesis, it reference	s subject-rel	f orally presenting ated foundations, its significance for	its into	erdiscij	olinary (connection	ns and its	non-subj	ect-related
3	Contents:									
	- Dispu		sis according to the procedure in the p		ion of	the thesi	s and the	questions th	at arose i	in the
4	Forms of		15							
7										
	Oral examination for the bachelor thesis									
5				3						
5		mination for ion requirement Non	nts:	S						
5	Participat	ion requirement Nor	nts:		sis					
5	Participate Formal: Content:	ion requirement Nor	nts:		sis					
	Participate Formal: Content:	Non Treatassessment:	nts:		sis					
	Participati Formal: Content: Forms of Oral exam	ion requirement Non Treat assessment: mination	nts:		sis					
6	Participation Formal: Content: Forms of Oral example Prerequision Application Applied Engineer	Non Non Trea assessment: mination te for the awa on of the mode Mathematics ring B.Eng., N	nts: ne ntment of the backe	elor the study pr Biotech	ogramn nnolog 3.Eng.,	y B.Sc.,	Electrical onics B.S	Engineering c., Renewab	g B.Eng., ble Energ	Computer
6	Participation Formal: Content: Forms of Oral example Prerequision Application Application Engineer and Indu	Non Non Trea assessment: mination ite for the awa on of the modu Mathematics ing B.Eng., I strial Engine te of the grade	nts: ne ntment of the bache and of credit points: ne ntment of the bache and of credit points: ne ntment of the bache and of credit points:	elor the study pr Biotech	ogramn nnolog 3.Eng.,	y B.Sc.,	Electrical onics B.S	Engineering c., Renewab	g B.Eng.,	Compute
6 7 8	Participation Formal: Content: Forms of Oral example Prerequision Application Applied Engineer and Indu	Non Non Trea assessment: mination at for the awa non of the modu Mathematics ring B.Eng., 1 strial Engine	nts: ne ntment of the bache rd of credit points: nle (in the following B.Sc., Apparative Mechanical Engine ering and Manager	elor the study pr Biotech	ogramn nnolog 3.Eng.,	y B.Sc.,	Electrical onics B.S	Engineering c., Renewab	g B.Eng., le Energ	Compute
6 7 8 9	Participating Formal: Content: Forms of Oral example Application Application Applied Engineer and Indu	Non Trea assessment: mination ite for the awa on of the modu Mathematics ring B.Eng., I strial Engine re of the grade g to BRPO	nts: ne atment of the backer rd of credit points: nle (in the following B.Sc., Apparative Mechanical Engine ering and Manager for the final grade:	elor the study pr Biotech	ogramn nnolog 3.Eng.,	y B.Sc.,	Electrical onics B.S	Engineering c., Renewab	g B.Eng., lle Energ	Compute
6 7 8 9	Participating Formal: Content: Forms of Oral example Application Application Applied Engineer and Indu	ion requirement Non Treat assessment: mination ite for the award on of the modulation Mathematics ing B.Eng., I strial Engine to the grade g to BRPO coordinator: -Ing. Anton I	nts: ne atment of the backer rd of credit points: nle (in the following B.Sc., Apparative Mechanical Engine ering and Manager for the final grade:	elor the study pr Biotech	ogramn nnolog 3.Eng.,	y B.Sc.,	Electrical Ponics B.S	Engineering c., Renewab	g B.Eng., ble Energ	Compute
6 7 8 9 10	Participation Formal: Content: Forms of Oral example Prerequision Application Application Applied Engineer and Industrial Importance according Module of Prof. Dr. Other infordal Literature	Non Trea assessment: mination tite for the awa on of the mode Mathematics ring B.Eng., I strial Engine te of the grade g to BRPO coordinator: -Ing. Anton I ormation: e will be ann	nts: ne atment of the backer rd of credit points: nle (in the following B.Sc., Apparative Mechanical Engine ering and Manager for the final grade:	study pr Biotechering B ment B.	ogramm nnolog 3.Eng., .Sc.	y B.Sc., 1 Mechatr	Electrical conics B.S	Engineering c., Renewab	g B.Eng., ole Energ	Compute
6 7 8 9 10	Participati Formal: Content: Forms of Oral example of the present	Non Trea assessment: mination ite for the awa on of the mode Mathematics ring B.Eng., I strial Engine te of the grade g to BRPO coordinator: -Ing. Anton I ormation: e will be ann	nts: ne ntment of the backer and of credit points: ne nle (in the following B.Sc., Apparative Mechanical Engine ering and Manager for the final grade:	study pr Biotechering B ment B.	ogramm nnolog 3.Eng., .Sc.	y B.Sc., 1 Mechatr	Electrical ronics B.S	Engineering c., Renewab	g B.Eng., ble Energ	Compute

io	n Wo	orkload:	Credits:	Stud	y semes	ter:	Frequency	y of the offer	Duratio	on:
	150	50 h	5	5th s	sem.		Annual (Winter)		1 seme	ester
							(
ur	se:		Planned group si	izes	Scop	e	Actual of time / contents	lassroom	Self-stud	ly
ctı	ıre		60 students		2	SCH	30	h	45	h
ti	on in sem	ninars	30 students		1	SCH	15	h	22.5	h
ero	cise		20 students		0	SCH	0	h	0	h
	ical or ser	eminar	15 students		1	SCH	15	h	22.5	h
рe	rvised sel	lf-study	60 students		0	SCH	0	h	0	h
111	ning outco	omes/comp	etences:							
ao m es	cquire kn nicro- and	nowledge o	old appliances to of electromagnet lectronics ances with regard	ic comp	patibili	ty (EMC				
(YRECTM SEIT ALL CM	W1, W3, ectifier, a fficiencie ontrol, p hree-pha lains-frie micondunovative ad in decaborator Commuta Mains-op	, B2, B6) inverter, coies, harmonorotection assertives endly power fusion of fuctor chip refields of centralised atorless co	nverter circuit wer converter cir	ower ca ower eleoned co th Power ics (ene- ower eleonent	rant opelculation ectronic onverte er Factor ergy) ar	eration ons c compo r (space or Contro nd micro	nents vector mo ol (PFC) electronic	dulation) s (informatio	on) on or	ne
	s of teach ure, semi	-	I teaching and pr	actical	training	g in smal	l groups (3–4 particip	ants)	
_	-	requirement								
_	al:	None				. = = :				
nt	ent:		iles on Electrical		nes (10)59) and	Drive Tec	hnology (10)13) shou	ıld be
m	s of asses		ssfully complete	u						
it	ten exam	nination or	oral examinatio	n						
			l of credit points:							
			ass and course as							
_					_		n	1.5		
c			e (in the following B.Eng, Engineer		-					mes) · Sciences B.Eng and Renewable Energ

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. Ing. habil. Klaus Hofer
11	Other information:
	Literature will be announced at the beginning of the course.
	Students must have sufficient knowledge and experience in the use and safety of electrical equipment.
	Renewable Energies study programme, specialisation in Energy Efficient Systems: Elective subject
12	Language:
	German

Math	nematics 1								MA1			
Ident	ification per:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:		
1150		300 h	10	10 1st sem.			Annual (Winter)		1 seme	ster		
1	Course:	1	Planned group sizes		Scope)	actual cor time / cla teaching		Self-stud	Self-study		
	Lecture		60 students		4	SCH	60	h	90	h		
		seminars	30 students		4	SCH	60	h	90	h		
	Exercise		20 students		0	SCH	0	h				
		or seminar	15 students		0	SCH	0	h	0 h			
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h		
	settings		of probabilities					basic con	nputer alg	gebra and		
3	compute	r numerics and	Take the militan	ons of t	nese in	to accol	int.					
3	Contents:			ons of t	nese in	to accol	int.					
3	Contents:	Sets; number s	systems N to C									
3	Contents:	Sets; number s Basics of logic Functions (pov functions, trige formula; polar Sequences, lin Derivative, des Integral, integral	systems N to C c; methodical sol- wers, roots, expo- conometric function representation on hits of sequences rivation rules, lengularity ration rules, lengularity of numerics; nur	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
3	Contents:	Sets; number s Basics of logic Functions (por functions, trige formula; polar Sequences, lin Derivative, de Integral, integral Combinatorics Fundamentals mathematical	systems N to C c; methodical sol- wers, roots, expo- conometric function representation on hits of sequences rivation rules, lengularity ration rules, lengularity of numerics; nur	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
	Contents: Forms of Lecture,	Sets; number s Basics of logic Functions (pov functions, trig formula; polar Sequences, lin Derivative, des Integral, integral Combinatorics Fundamentals mathematical s teaching: seminar-basec	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of nits of sequences rivation rules, ling ration rules, leng s; basics of stoch of numerics; nur software	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
	Contents: Forms of Lecture,	Sets; number s Basics of logic Functions (pov functions, trig formula; polar Sequences, lin Derivative, de Integral, integral Combinatorics Fundamentals mathematical	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of nits of sequences rivation rules, ling ration rules, leng s; basics of stoch of numerics; nur software	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4	Contents: Forms of Lecture,	Sets; number s Basics of logic Functions (por functions, trige formula; polar Sequences, lin Derivative, de: Integral, integral Combinatorics Fundamentals mathematical: teaching: seminar-basection requirement	systems N to C c; methodical solutions, roots, exponometric function representation on the solution rules, linguistion rules, lenguistion rules, lenguistion rules, of numerics;	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4	Contents: Forms of Lecture, Participat Formal: Content:	Sets; number s Basics of logic Functions (por functions, trig formula; polar Sequences, lin Derivative, de Integral, integral Combinatorics Fundamentals mathematical: teaching: seminar-based ion requirement None	systems N to C c; methodical solutions, roots, exponometric function representation on the solution rules, linguistion rules, lenguistion rules, lenguistion rules, of numerics;	ving of onential fons included from place and of fear appropriate and astics	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4	Contents: Forms of Lecture, Participat Formal: Content: Forms of	Sets; number s Basics of logic Functions (por functions, trige formula; polar Sequences, lin Derivative, de Integral, integr Combinatorics Fundamentals mathematical : teaching: seminar-basec ion requirement None None assessment:	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of representation rules, ling ration rules, leng s; basics of stoche of numerics; nur software	ving of onential fons included from the complement of the compleme	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4 4 5	Contents: Forms of Lecture, Participat Formal: Content: Forms of Written of	Sets; number s Basics of logic Functions (por functions, trig formula; polar Sequences, lin Derivative, de: Integral, integr Combinatorics Fundamentals mathematical : teaching: seminar-basec ion requirement None assessment: examination or	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of nits of sequences rivation rules, lengularities; basics of stocks of numerics; nur software It teaching s:	ving of onential fons included from the complement of the compleme	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4 4 5	Contents: Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis	Sets; number s Basics of logic Functions (pov functions, trig formula; polar Sequences, lin Derivative, des Integral, integral Combinatorics Fundamentals mathematical s teaching: seminar-based ion requirement	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of representation rules, ling ration rules, leng s; basics of stoch of numerics; nur software I teaching s:	ving of onential fons included from the complement of the compleme	equation function uding c ex num function roxima and vo	ns and i ns, logar alculation ibers ns tion, ext lume	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4 5 6 7	Contents: Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequis Module	Sets; number s Basics of logic Functions (pov functions, trig formula; polar Sequences, lin Derivative, des Integral, integral Combinatorics Fundamentals mathematical s teaching: seminar-based ion requirement None assessment: examination of ite for the award examination p	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of representation rules, ling ration rules, leng s; basics of stochs of numerics; nur software I teaching s: c c r oral examinatio d of credit points: ass	ving of onential from sinch of complean and of the ear apported and of the ear apported astics onerical from the ear apported astics onerical from the ear apported astics onerical from the ear apported as the ear apport	equation function adding the control of the control	ns and ins, logar alculation alculation bers instion, extlume s of the	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		
4 5 6	Contents: Forms of Lecture, Participat Formal: Content: Forms of Written of Prerequise Module of Applications.	Sets; number s Basics of logic Functions (pov functions, trig formula; polar Sequences, lin Derivative, des Integral, integral Combinatorics Fundamentals mathematical s teaching: seminar-based ion requirement None assessment: examination of ite for the award examination p	systems N to C c; methodical sol- wers, roots, expo- conometric function representation of nits of sequences rivation rules, lengularity sis; basics of stocks of numerics; nur software I teaching teac	ving of onential from sinch of complean and of the ear apported and of the ear apported astics onerical from the ear apported astics onerical from the ear apported astics onerical from the ear apported as the ear apport	equation function adding the control of the control	ns and ins, logar alculation alculation bers instion, extlume s of the	nequalities rithms, poly ons on the g	eneral pla	ne triangl	e) Euler's		

	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Jörn Loviscach
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	hematics 2	Workload:	Credits:	C4 J-		4	F	-£41£6	Duration	
iaen num	tification ber:	worktoau:	Credits:	Study	semes	ter:	Frequency	of the offer	Duran	OII:
115		300 h	10	2nd	2nd sem.		Annual (Summer	1 Semester		ester
1	Course:		Planned group s	Planned group sizes		e	actual contact time / classroom teaching		Self-study	
	Lecture		60 students		4	SCH	60	h	90	h
	Tuition is	n seminars	30 students		4	SCH	60	h	90	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervis	ed self-study	60 students		0	SCH	0	h	0	h
behaviour of a function of several variables. They determine volumes and similar quamultidimensional integration. For the above tasks, they apply functions of computer computer algebra systems and take the limitations of these into account.						hey app	ly function	and similar as of comp	quantitio outer nur	es through nerics and
3	multidir compute	nensional inte er algebra syst	egration. For the	above t	asks, t	hey app	ly function	and similar	quantitio	es through
3	Contents	: Vectors, scala Matrices Determinants Eigenvalues a Linear system Fundamentals differential ec Power series; Fourier series Laplace trans Functions of	egration. For the tems and take the tems and take the tems and take the tems and take the tems and eigenvectors as of equations and equations with con approximations between the temperature of the temper	product d basic l solving stant coo y Taylo Gradiei	solutions of states and solutions of states and solutions or series are series as a series are series as a series are ser	r equation method ary differents as we seem a, mu	ns, plane ed thereof rential equal transfer equal t	quations ations, in pable different	particular	linear actions
	Contents Contents Forms of	: Vectors, scala Matrices Determinants Eigenvalues a Linear system Fundamentals differential ec Power series; Fourier series Laplace trans Functions of s Basic numeric	ar product, vector and eigenvectors as of equations and approximations beform, in particula several variables: cal methods in the	product d basic l solving stant coo y Taylo Gradiei	solutions of states and solutions of states and solutions or series are series as a series are series as a series are ser	r equation method ary differents as we seem a, mu	ns, plane ed thereof rential equal transfer equal t	quations ations, in pable different	particular	linear
4	Contents Forms of Lecture.	: Vectors, scala Matrices Determinants Eigenvalues a Linear system Fundamentals differential ec Power series; Fourier series Laplace trans Functions of s Basic numeric	egration. For the tems and take the tems and take the tems and take the tems and take the tems and eigenvectors are of equations and equations with concapproximations to the temporal variables: cal methods in the temporal temporal variables: cal methods in the temporal variables.	product d basic l solving stant coo y Taylo Gradiei	solutions of states and solutions of states and solutions or series are series as a series are series as a series are ser	r equation method ary differents as we seem a, mu	ns, plane ed thereof rential equal transfer equal t	quations ations, in pable different	particular	linear
3 4 5	Contents Forms of Lecture.	: Vectors, scala Matrices Determinants Eigenvalues a Linear system Fundamentals differential ec Power series; Fourier series Laplace trans Functions of s Basic numeric	egration. For the tems and take the tems and take the tems and take the take the take the take the take take the take take take take take take take tak	product d basic l solving stant coo y Taylo Gradiei	solutions of states and solutions of states and solutions or series are series as a series are series as a series are ser	r equation method ary differents as we seem a, mu	ns, plane ed thereof rential equal transfer equal t	quations ations, in pable different	particular	linear

6	Forms of assessment:
	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)
	Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Jörn Loviscach
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Metr	rology								MT		
Ident numb	ification ber:	Workload:	Credits:	Study	/ semest	er:	Frequency	y of the offer	Duratio	Duration:	
1169			5 3rd		d or 5th sem.		Annual (Winter)		1 semester		
1	Course:		Planned group si	ti			Actual of time / co	lassroom	Self-stu	dy	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
		or seminar	15 students		1	SCH	15	h	22.5	h	
	•	d self-study outcomes/com	60 students		0	SCH	0	h	0	h	
	and elect After cor a measur	romechanicanpleting the	easurement deviat Il measuring instru module, they will l t, perform the mea analysis.	ments v be able t	work in to selec	principl t a devic	le and can e suitable	handle mea for a measu	suring in rement ta	struments ask, desig	
3	Contents:										
	DigitalError ofMeasu	calculation arement of el	ts mechanical measu nd causes of measu ectrical quantities amic behaviour of	uremen	t deviat	ions					
4	Forms of	teaching:									
			ed teaching and pr	actical o	course						
5		ion requireme	nts:								
	Formal:	-	e dules: 5 Electrical Engin	eering 2	2						
	Content:										
6	Forms of	assessment:									
			each with prelimi	nary ex	aminati	on					
7	_		rd of credit points: pass with prelimin	nary exa	minatio	on					
8			ule (in the following g B.Eng, Engineer		-		s B.Eng aı	nd Renewab	le Energ	ies	
9	Importance	ce of the grade	for the final grade:								
10	Module c	oordinator:	Waster 11	~1~1·							
1.1	Other info		omas Westerwalbe	sion							
11	Literatur	e will be ann	ounced at the beg	inning o	of the co	ourse.					
12	Language German	:									
	German										

	ern Energy ification	Workload:	Credits:	Stud	y semes	ter:	Frequenc	y of the offer	MEP Durati	ion:
numb		Workload.	Cicuits.	Stud	y scilics	tci.	Trequenc	y of the offer	Duran	on.
1176	i	150 h	5	5 6th sem.			Annual (Summe	er)	1 semester	
1	Course:		Planned group s	Planned group sizes		Scope		contact classroom	Self-study	
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
2	Learning	outcomes/com	petences:			-				
	and to di	scuss them in	ne module, studer the group, to dev assess the conseq	elop a st	trategy	concept	and to pub	olicly present	t technic	al projects
3	Contents:									
	Treatmen	nt of technica	l energy projects	, e.g.						
	- E-mob									
	- Wind	energy projec	ts							
		energy use								
		ss and agricu								
			ter management							
	_		nergy policy, e.g.	•						
			nergy efficiency							
			w on the energy in actures and trade							
4	Forms of		ictures and trade	nows						
4		and seminar								
5		ion requiremen	nts:							
5	Formal:	Non								
	Content:	Non								
6	Forms of	assessment:								
	Term pa	per								
7	_		d of credit points:							
		examination j								
8			le (in the following	g study p	rogramı	nes)				
		ole Energies I								
9			for the final grade:							
10		g to BRPO oordinator:								
10			is Loesenbeck							
11	Other info		18 LUCSCHUCK							
11			ounced at the beg	rinning .	of the o	Ollrea D	egular co	minar		
			for the module e	-		ourse. K	eguiai sei	1111141		
12	Language		Tot the inodule e	ланша	11011					
	German									

r CISC	onnel and	Organisation							PUO	
Ident numb	ification	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duratio	n:
1192		150 h 5 4th or 6th sem. Annual (Summer)		·)	1 semester					
1	Course:		Planned group si	Planned group sizes		e	Actual of time / cl	assroom	Self-stud	у
	Lecture		60 students		3 SCH		45	h	67.5	h
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Superviso	ed self-study	60 students		0	SCH	0	h	0	h
3	that can They un successf They ca practica They are entrepre They ha demonst	occur during to derstand the in ful learning. In explain the lexamples. The efamiliar with the familiar with the derivity we basic known that this with	essential theoretical ecommunication in portance of lear principles of organ as important topics by the degree about the context of examples, e.g. respectively.	on proce rning for anisation isationa of orga	ss and or chan onal the later forms anisation ristics	have prage proceed and swith resonal charant sign	have che gard to the age and car	sible solution design cked their serior applicable assess the fixed fixe	ons. the condi significan ility. or signific	tions for ce using cance for and have
Contents: Significance, goals and tasks of human resources management Fundamentals of labour law Fundamentals of Communication Fundamentals of Learning Theory Environmental conditions, learning control, strategies for lifelong learning Organisational structure and process organisation, forms of primary and second Organisational change Personnel management and conflict resolution Forms of teaching:										
4	Fundam Environ Organis Organis Personn	entals of Learn mental conditi ational structur ational change el managemen	ning Theory ons, learning con re and process or at and conflict res	ganisation	on, for	ms of pr	imary and	-	organisati	on
4	Fundam Environ Organis: Organis: Personn Forms of Lecture,	entals of Learnmental conditional structurational change el management teaching: seminar-base	ning Theory ons, learning con re and process or at and conflict res d teaching with e	ganisation	on, for	ms of pr	imary and	-	organisati	on
	Fundam Environ Organis: Organis: Personn Forms of Lecture,	entals of Learn mental conditi ational structur ational change el managemen	ning Theory cons, learning con re and process or at and conflict res d teaching with e	ganisation	on, for	ms of pr	imary and	-	organisati	on

	Written examination, combination examination, performance 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)
	Engineering Computer Sciences B.Eng, 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:
	Economist Ulrike Franke
11	Other information:
	Literature will be announced at the beginning of the course. Renewable Energies study
	programme: Possible elective subject
12	Language:
	German

Photo	ovoltaics								PHV	
Identi	fication er:	Workload:	Credits:	Study	/ semest	er:	Frequency	y of the offer	Duratio	on:
1193		150 h	5	6th sem.			Annual (Summer	r)	1 seme	ester
1	Course:		Planned group si	izes	Scop	e	Actual of time / cl	assroom	Self-stud	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	photovol of the PV	taic systems, ' ' systems on t	he basic structure.g. with simulating the roof of Bielefoxt of research and	ion softv eld Univ	ware, a versity	nd comp of Appli	are the re	sults with n	neasurem	ent results
3	Contents:									
	- Structu	re and function	on of solar cells							
	- Manufa	acturing proce	ess of solar cells	and sola	ır modu	ıles				
	-	-	ovoltaic systems							
		r technology								
		of photovolta								
4			d development							
4	Forms of t	_	d teaching with e		ond ne	ostisal s				
5		on requiremen		xercises	and pi	actical C	ourse			
	Formal:	None								
	Content:	None								
6		assessment:								
	Written o	or oral examin	nation; in each cas	se with	prelimi	nary exa	mination	performanc	e	
7			d of credit points:			-				
			ass and course as							
8			le (in the following	study pr	ogramn	nes)				
		le Energies B								
9	•	•	for the final grade:							
10		g to BRPO oordinator:								
10			wenzfeier-Hellka	amn						
1.1	Other info		w Chizhelet-HellKa	шр						
1 T T		rmation:								
11	Literature will be announced at the beginning of the course									
11	Literature Language	e will be anno	ounced at the beg	inning o	of the c	ourse.				

Phy	sics 1								PH1		
	tification	Workload:	Credits:	Study	semest	er:	Frequency of	of the offer	Duration	1:	
num 1198			5	1st se	em.		Annual (Winter)		1 semester		
1	Course:		Planned group si	sizes Scope)	Actual co time / clast teaching		Self-study	Self-study	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in	n seminars	30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
		or seminar	15 students		1	SCH	15	h	22.5	h	
	Superviso	ed self-study	60 students		0	SCH	0	h	0	h	
	mechani	ics of stationa	of mass points and moving	liquids	and g	ases. Th	ne students	have init	ial experi	ence in	
3	The stu experim measure expectat Contents - Physic	dents have a ental reports. ement data. The tions and have	ontexts and in the cquired initial so They know the ne students can carried out a system. Notations, rules,	kills in method compare ematic	simpl s of er e their analysi	e exper ror ana practica	rimentation lysis and call al measuren	and in t an apply nent resul	the prepar them to the ts with the	ation o	
3	Contents - Physic - Basic - Kinen - Newte - Work - Conse - Shock - Mecha - Basic	can dents have a ental reports. Ement data. The cons and have a concepts of mentics: Transla onian mechanicand energy ervation laws of laws anics of liquids concepts of fluids concepts of fluids.	Notations, rules, echanics tion and rotation cs: Mass, force, rules and gases at res	wills in method compartematic unit sys	simples of erectheir analysis	e expertor and practical swith the	rimentation lysis and call measuren ne help of si	and in t an apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	
3	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mecha - Basic	ental reports. Ement data. The consent data and have sent data. The concepts of mentics: Translationian mechanicand energy ervation laws of laws anics of liquids concepts of flucteaching:	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, moments and gases at resuld mechanics	wills in method compare ematic unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir owr eoretica	
	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mecha - Basic	ental reports. Ement data. The consent data and have a concepts of mentics: Translationian mechanicand energy ervation laws of a laws anics of liquids concepts of flucteaching: Seminar with	Notations, rules, echanics tion and rotation cs: Mass, force, rules and gases at res	wills in method compare ematic unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir owr eoretica	
4	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mecha - Basic - Forms of Lecture, experim	ental reports. Ement data. The consent data. The consent data and have been all quantities: concepts of mentics: Translationian mechanicand energy ervation laws of a laws anics of liquids concepts of fluctures. Steaching: Steaching: Steaching: Steaching:	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, moments and gases at resuld mechanics	wills in method compare ematic unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration of neir own eoretica	
	Contents - Physic - Basic - Kinen - Newte - Work - Conse - Shock - Mech - Basic Forms of Lecture, experim Participa	cal quantities: cal quantities: cal quantities: concepts of mentics: Translationian mechaniand energy crvation laws of laws anics of liquids concepts of fluit teaching: seminar with ents) tion requirement	Notations, rules, echanics tion and rotation cs: Mass, force, rules and gases at resuid mechanics	unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir owr eoretica	
4	Contents - Physic - Basic - Kinen - Newte - Work - Conse - Shock - Mecha - Basic Forms of Lecture, experim Participa Formal:	concepts of mentatics: Translationian mechaniand energy ervation laws of laws anics of liquids concepts of fluctures of fluctures of fluctures of teaching: seminar with ents) tion requirements None	Notations, rules, echanics tion and rotation cs: Mass, force, rules and gases at resuld mechanics practice-oriented ts:	unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir owr eoretica	
5	Contents - Physic - Basic - Kinen - Newte - Work - Conse - Shock - Mecha - Basic Forms of Lecture, experim Participa Formal: Contents:	cal quantities: cal quantities: cal quantities: concepts of mentics: Translationian mechaniand energy crvation laws of laws anics of liquids concepts of fluit teaching: seminar with ents) tion requirement	Notations, rules, echanics tion and rotation cs: Mass, force, rules and gases at resuld mechanics practice-oriented ts:	unit sys	simples of erectheir analysis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	
4	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mech - Basic Forms of Lecture, experim Participa Formal: Content:	cal quantities: cal quantities: cal quantities: concepts of matics: Translationian mechaniand energy crvation laws of laws anics of liquids concepts of fluids concepts of fluids concepts of fluids concepts of None None assessment:	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, moments and gases at resuld mechanics	unit sys	tems tems gular m	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	
5 6	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mecha - Basic Forms of Lecture, experim Participa Formal: Content: Forms of Written	concepts of fluids concepts of f	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, momen s and gases at resuld mechanics practice-oriented ts:	unit sys	tems tems gular m	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	
5	Contents - Physic - Basic - Kinen - Newto - Work - Conse - Shock - Mecha - Basic Forms of Lecture, experim Participa Formal: Content: Forms of Written Prerequise	concepts of fluctures of fluctu	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, moments and gases at resuld mechanics practice-oriented ts:	unit sys noment tum, an t	tems tems um, mo	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	
5 6	Contents - Physic - Basic - Kinen - Newte - Work - Conse - Shock - Mecha - Basic Forms of Lecture, experim Participa Formal: Content: Forms of Written Prerequis module	concepts of matics: Translationian mechaniand energy ervation laws of laws anics of liquids concepts of fluctures of teaching: seminar with ents) tion requirement None assessment: examination; esite for the award examination points.	Notations, rules, echanics tion and rotation cs: Mass, force, 1 f energy, momen s and gases at resuld mechanics practice-oriented ts:	unit sys noment tum, an t exercis nary exa	tems tems des, basis	oment of	rimentation lysis and call measuren ne help of si	and in tan apply nent resul mple exar	the prepar them to the ts with the nples.	ration o neir own eoretica	

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

	sics 2									PH2	
Ident	ification per:	Workloa	ıd:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	1:
1202		150 h 5 2nd ser		sem.	em. Annual (Summer)			1 semester			
1	Course:		Pl	anned group si	izes	Scope	e	Actual co time / cla teaching		Self-study	7
	Lecture		60) students		2	SCH	30	h	45	h
	Tuition in	n seminars	30) students		1	SCH	15	h	22.5	h
	Exercise) students		0	SCH	0	h	0	h
		or seminar		students		1	SCH	15	h	22.5	h
	Supervise	ed self-stud	y 60) students		0	SCH	0	h	0	h
	and describe them mathematically. Students understand the essential principles of the formation and properties of imaging through optics. They know the terms coherence, interference and diffraction. Students recognise problem interrelationships and can solve technical problems independently. Students are familiar with the skills of simple experimentation and the presentation of measurement results. They have practise error analysis of measurement results and the preparation of reports on the laboratory experiment the practical course. The students can systematically analyse their experimental results.							em the tised the			
	Contents: - Thermodynamics: Heat theory, gas laws, main theorems, real gases, heat transport, radiation laws - Vibrations: Basic terms, free undamped vibration, free damped vibration, forced vibration, coupled vibration - Waves: Basic concepts of the nature and mathematical description of a wave, standing waves. Interference and diffraction, Doppler effect										
3	- The law - Vib cou - Wa Inte	ermodynar s orations: B pled vibra ves: Basic erference a ometrical o ple optica	asic terration concep and diffroptics / I	ns, free undants of the naturaction, Doppioasic concepts, imaging errors	mped vire and maler effects of ray	bration nathem t	, free da atical de	mped vibra	tion, force	ed vibration	n, aves.
3	- The law - Vib cou - Wa Inte	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical of ple optica ments of v teaching: seminar v	asic territion concep and diffr optics / l l device wave opt	ns, free undants of the naturaction, Doppioasic concepts, imaging errors	mped vi re and m ler effects of ray rors	bration nathem t optics,	, free da atical de refractio	mped vibra scription of on, imaging	tion, force a wave, s with mirr	ed vibration tanding water	n, aves.
	- The law - Vib cou - Wa Inte - Geo sim - Ele Forms of Lecture, experim	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical o ple optica ments of v teaching: seminar v ents) tion require	asic terration conceptand diffroptics / I device wave opt with prace	ms, free undarets of the naturaction, Dopple pasic concept s, imaging entics	mped vi re and m ler effects of ray rors	bration nathem t optics, es, basi	atical de refraction	mped vibra escription of on, imaging	tion, force a wave, s with mirr course – P	ed vibration tanding water	n, aves.
4	- The law - Vib cou - Wa Inte - Geo sim - Ele Forms of Lecture, experim Participal Formal: Content:	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical o ple optica ments of v teaching: seminar v ents) tion require	asic terration conceptand diffroptics / I device wave optowith practice. Contents: Module: 1198 Physics	ms, free undarents of the naturaction, Dopple pasic concept s, imaging errors concept stics etice-oriented sof the moduly spics 1	mped vi re and m ler effects of ray rors exercise	bration nathem t optics, es, basi	atical de refraction ic physical 198) inc.	mped vibra escription of on, imaging	tion, force a wave, s with mirr course – P	ed vibration tanding water	n, aves.
5	- The law - Vib cou - Wa Inte - Geo sim - Ele Forms of Lecture, experim Participat Formal: Content:	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical o ple optica ments of v teaching: seminar v ents) tion require assessment examination	asic terration c concepted diffrontics / l l device wave opto with praction to the contents Contents Module: 1198 Physics t: on; each	ms, free undarts of the naturaction, Dopple pasic concept s, imaging entics etice-oriented s of the moduly sics 1	mped vi re and m ler effects of ray rors exercise	bration nathem t optics, es, basi	atical de refraction ic physical 198) inc.	mped vibra escription of on, imaging	tion, force a wave, s with mirr course – P	ed vibration tanding water	n, aves.
4 5	- The law - Vib cou - Wa Inte - Get sim - Ele Forms of Lecture, experim Participal Formal: Content:	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical o ple optica ments of v teaching: seminar v ents) tion require assessment examination	asic terration c concepted diffrontics / I device wave optowith practice to the contents on the contents on; each award of	ms, free undarts of the naturaction, Dopple pasic concept s, imaging entics etice-oriented s of the moduly sics 1	mped vi re and m ler effects of ray rors exercise	bration nathem t optics, es, basi cs 1 (1	atical de refraction ic physical 198) incom	mped vibra escription of on, imaging	tion, force a wave, s with mirr course – P	ed vibration tanding water	n, aves.
5	- The law - Vib cou - Wa Inte - Geo sim - Ele Forms of Lecture, experim Participal Formal: Content: Forms of Written Prerequis Module Applicati	ermodynar s prations: B pled vibra ves: Basic erference a pmetrical of ple optica ments of v teaching: seminar v ents) tion require assessment examination ite for the a examination	asic terration concepted diffronties / l device wave opt with prace ements: Contents Module: 1198 Phy t: on; each award of on pass nodule (in	ms, free undants of the naturaction, Dopple pasic concept s, imaging entics etice-oriented soft the modulary sics 1 with preliminate following	mped vi re and m ler effects of ray rors exercise le Physic	bration nathem t optics, es, basi cs 1 (1	atical de refraction physical	mped vibra escription of on, imaging	tion, force a wave, s with mirr course – P	ed vibration tanding water	n, aves.

	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Sonja Schöning
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Prac	tical Projec	ct / Internship							PRA	
Ident numb	ification per:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:
1292	2	450 h	15	7th s	em.		each sem	ester	12 weel	ks
1	Course:		Planned group s	Planned group sizes		;	Actual contact time /classroom teaching		Self-study	y
	Lecture		60 students		0	SCH	0	h	450	h
	Tuition in	n seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	In the work term, the activities and learning outcomes imparted in the course of stuin a practice-oriented manner. To this end, students should work independently on and develop suitable solution strategies. The main aim is to develop and expand i and problem solving, presentation and communication skills. Contents:						ngineering	g projects		
			41 C: -1 -1 - C4	::4 6	41	4:	.1			شا د د داد اد
	include a	an engineering report and the	m the field of act g task. At the en students a final ional advising fro	d of the report.	work During	term, th	e supervisi ctical phase	ing compa	ny is to p	repare ar
4	include a activity individu	an engineering report and the al and professi	g task. At the en students a final	d of the report.	work During	term, th	e supervisi ctical phase	ing compa	ny is to p	repare ar
4	include activity individu	an engineering report and the al and professi teaching:	g task. At the en students a final ional advising fro	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
4 5	include activity individu	an engineering report and the al and professi teaching:	g task. At the en students a final ional advising fro g with exercises	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
	include activity individu	an engineering report and the al and professi teaching: -based teachin	g task. At the en students a final ional advising from g with exercises ts:	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
	include activity individu Forms of Seminar Participat	an engineering report and the al and professi teaching: -based teachingtion requirement	g task. At the en students a final ional advising from g with exercises tas:	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
	Forms of Seminar Participat Formal:	an engineering report and the al and professi teaching: -based teaching ion requirement	g task. At the en students a final ional advising from g with exercises tas:	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
5	Forms of Seminar Participat Formal: Content: Forms of Term pa	teaching: -based teachintion requirement None assessment: per	g task. At the en students a final ional advising from g with exercises tas:	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare an
5	Forms of Seminar Participat Forms of Term pa Prerequis	teaching: -based teachin tion requirement None assessment: per	g task. At the en students a final ional advising from g with exercises tas:	d of the report.	e work During upervis	term, the practing univ	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
5 6 7	Forms of Seminar Participat Forms of Term pa Prerequis Module	teaching: -based teaching ition requirement None None assessment: per ite for the award examination p	g task. At the en students a final ional advising from g with exercises tas:	as accordance	work During upervis	term, the the practing university	e supervisi ctical phase versity lect	ing compa	ny is to p	repare ar
5	Forms of Seminar-Participat Formal: Content: Forms of Term pa Prerequis Module Applicati	teaching: -based teachin tion requirement None assessment: per itte for the award examination p on of the modul	g task. At the en students a final ional advising from g with exercises is: d of credit points: ass e (in the following	as accord	work During upervis mpanyi	ng guida	e supervisictical phase versity lectural ance	ng compa	ny is to prents should	repare ar d receive
5 6 7	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica	teaching: -based teaching ion requirement None None assessment: per ite for the award examination p on of the modul al Engineering	g task. At the en students a final ional advising from g with exercises as: d of credit points: ass e (in the following g B.Eng., Engine	as according study preering (work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ar d receive
5 6 7	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., J	teaching: -based teaching ion requirement None None assessment: per ite for the award examination p on of the modul al Engineering	g task. At the en students a final ional advising from g with exercises is: d of credit points: ass e (in the following	as according study preering (work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ar d receive
5 6 7 8	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., J. B.Sc.	teaching: -based teaching ition requirement None assessment: per ite for the award examination p on of the modul al Engineering Mechatronics	g task. At the en students a final ional advising from the students a final ional advising from the students as the students a	as accorded study preering (e Energi	work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ar d receive
5 6 7	Forms of Seminar Participat Forms of Term pa Prerequis Module Applicati Electrica B.Eng., I B.Sc.	teaching: -based teaching ition requirement None None assessment: per ite for the award examination p on of the modul al Engineering Mechatronics I	g task. At the en students a final ional advising from g with exercises as: d of credit points: ass e (in the following g B.Eng., Engine	as accorded study preering (e Energi	work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ar d receive
5 6 7 8 9	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., I B.Sc.	teaching: -based teaching -bas	g task. At the en students a final ional advising from the students a final ional advising from the students as the students are students. The students are students as the students are	as accorded study preering (e Energi	work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ard receive
5 6 7 8	Forms of Seminar-Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., I B.Sc. Important accordin Module c	teaching: -based teaching ion requirement None None assessment: per iite for the award examination p on of the modul al Engineering Mechatronics l ce of the grade for the	g task. At the en students a final ional advising from the following g with exercises as: d of credit points: ass e (in the following g B.Eng., Engine B.Sc., Renewable for the final grade:	as accorded study preering (e Energi	work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare and receive
5 6 7 8	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., J B.Sc. Important accordin Module c Prof. Dr	teaching: -based teaching: -based teaching: -based teaching: -based teaching: -None None assessment: per itte for the award examination p on of the modulal Engineering Mechatronics I	g task. At the en students a final ional advising from the following g with exercises as: d of credit points: ass e (in the following g B.Eng., Engine B.Sc., Renewable for the final grade:	as accorded study preering (e Energi	work During upervis mpanyi rogramn Comput	ng guida	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare and receive
5 6 7 8 9	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., B.Sc. Importana accordin Module of Prof. Dr. Other info	teaching: -based teaching: -based teaching: -based teaching: -based teaching: None None assessment: per ite for the award examination p on of the modul al Engineering Mechatronics I ce of the grade for the grade	g task. At the en students a final ional advising from the following g B.Eng., Engine B.Sc., Renewable for the final grade:	as accordance as the service of the service as accordance	mpanyi rogramn Computes B.Er	ng guida nes) ter Scieng, and I	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare ard receive
5 6 7 8	Forms of Seminar Participat Formal: Content: Forms of Term pa Prerequis Module Applicati Electrica B.Eng., B.Sc. Importana accordin Module of Prof. Dr. Other info	teaching: -based teaching iton requirement None None assessment: per ite for the award examination p on of the modul al Engineering Mechatronics l ce of the grade f ag to BRPO coordinator: -Ing. Anton K ormation: re will be anno	g task. At the en students a final ional advising from the following g with exercises as: d of credit points: ass e (in the following g B.Eng., Engine B.Sc., Renewable for the final grade:	as accordance as the service of the service as accordance	mpanyi rogramn Computes B.Er	ng guida nes) ter Scieng, and I	ance nces B.En	ng compa e, the stude arers.	ny is to prents should	repare and receive

Prod	uct and Pr	ice Man	agemei	nt						PPM	
Ident	ification per:	Workl	oad:	Credits:	Stud	y semes	ter:	Frequenc	y of the offer	Durati	on:
1209)	150 h		5	5th s	sem.		Annual (Winter)		1 sem	ester
1	Course:			Planned group s	izes	Scop	e	Actual time / c	lassroom	Self-stu	dy
	Lecture			60 students		3	SCH	45	h	67.5	h
	Tuition in	semina	rs	30 students		1	SCH	15	h	22.5	h
	Exercise			20 students		0	SCH	0	h	0	h
	Practical	or semin	ar	15 students		0	SCH	0	h	0	h
	Supervise	ed self-st	udy	60 students		0	SCH	0	h	0	h
2	Learning Students		•	etences: owledge of the t	ools of	operati	onal mai	keting an	d can classif	v them a	ns practica
	impleme program	ntation me, pro	tools of	f strategic mark d pricing polic	eting. T	hey ga an eva	in know. luate the	ledge of their possibi	ne methods llities and li	and desi mits. Th	gn tools of ne students
				f action of the nts acquire the							
	througho	out their	entire l	ife cycle and to	evalua	te their	practica	lity.	TOT the ma	rketing c	r product.
3	Contents:										
3			w of th	e instruments o	f operat	ional m	arketing	5			
		Progran	-	licy							
		Product									
		Contrac	0 1	•	1.						
4	Forms of			of distribution	poncy						
7		_		teaching							
5	Participat			<u>~</u>							
	Formal:		None								
	Content: Forms of										
6				ombination exa	minatio	n perfo	rmance	examinati	on or oral e	kaminati	on
7				of credit points:	immutio	i, perro		CHAIIIII	on or orar ca	<u>tammat</u>	<u> </u>
	Module	examina	ation pa	ss							
8				(in the following							
	Mechatr	onics B	Sc., Re	newable Energi	ies B.Er	ng. and	Industri	al Enginee	ering and Ma	anageme	ent B.Sc.
9	Importano accordin			or the final grade:							
10	Module c	oordinat	or:								
				gard Manz-Sch	umache	r					
11	Other info			unand at tha haa	innina	of the =	Ollego D	anarrahl-	Enorgies et	ıdı	
				inced at the beg ective subject to			ourse. K	enewable	Energies sti	iay	
12	Language										
	German										

2	Course: Lecture Tuition in Exercise Practical of Supervise Learning of The stude analysis relation products	or seminar d self-study outcomes/coments possess and assessm to different	the technical and ent for technical technical produc	4th o	y semes or 6th s Scop 2 2 0 0	em.	Annual (Summer Summer S	contact lassroom	Self-stud 45 45 0	ester dy h h
1210	Course: Lecture Tuition in Exercise Practical of Supervise Learning of The stude analysis relation products	outcomes/coments possess and assessm to different and evalua	Planned group s 60 students 30 students 20 students 15 students 60 students the technical and technical product	nethodo	Scop 2 2 0 0 0	e SCH SCH SCH SCH	Actual of time / cliteaching 30 30 0 0	contact lassroom	Self-stud 45 45 0	h h
2	Lecture Tuition in Exercise Practical of Supervise Learning of The stude analysis relation products	or seminar d self-study outcomes/coments possess and assessm to different and evalua	60 students 30 students 20 students 15 students 60 students the technical and technical product	methodo	2 2 0 0 0	SCH SCH SCH SCH	time / cl teaching 30 30 0	h h h	45 45 0	h h
2	Exercise Practical of Supervise Learning of The stude analysis relation products	or seminar d self-study outcomes/coments possess and assessm to different and evalua	30 students 20 students 15 students 60 students spetences: the technical and technical product		2 0 0	SCH SCH SCH	30 30 0 0	h h h	45 0	h
2	Exercise Practical of Supervise Learning of The stude analysis relation products	or seminar d self-study outcomes/coments possess and assessm to different and evalua	20 students 15 students 60 students spetences: the technical and technical product		0 0	SCH SCH	0	h	0	
2	Practical of Supervise Learning of The stude analysis relation products	d self-study outcomes/coments possess and assessm to different and evalua	15 students 60 students spetences: the technical and technical productions and technical productions.		0	SCH	0			
2 3	Supervise Learning of The stude analysis relation products	d self-study outcomes/coments possess and assessm to different and evalua	60 students spetences: the technical and technical product		0			h		h
2	Learning of The stude analysis relation products	outcomes/coments possess and assessm to different and evalua	petences: the technical and tent for technical technical produc			SCH			0	h
3	The stude analysis relation products	ents possess and assessm to different and evalua	the technical and ent for technical technical produc		1		0	h	0	h
		1	te the success		ts. The	y can u p instru	se the ins ments for	truments re risk minin	quired fo	or this in for these
	 Production Innova Quality Project Techni Risk ty Metho Metho Risk n Integra Instrum 	ds of technic nanagement i ation of risk ments of eval	ment nt agement ntification alysis and risk rar cal and economic instruments and p management into luation and docun	risk asserocesses	s luct de		nt cycle			
4	Forms of		ed teaching with ϵ	amaiaa	2/2022	tudios				
		ion requiremen		ACICISES	s/case s	tuuics.				
_	Formal:	Nor								
<u> </u>	Content:	Nor								
		assessment:								
~			xamination or ora	al exami	nation					
			rd of credit points:							
	_	examination	_							
			ıle (in the following	g study pi	rogramı	nes)				
			B.Eng. and Indust		_		Ianagemer	t B.Sc.		
			for the final grade:			-	<u> </u>			
		g to BRPO								
10	Module co	oordinator:								
			hwenzfeier-Hellk	amp						
	Other info		ounced at the beg							

12 Language:
German

	ect 1									PR1	
Iden	tification	Work	load:	Credits:	Study	y semest	ter:	Frequency	y of the offer	Duratio	n:
1220		150 h	l	5	4th s	sem.		Annual (Summer)		1 seme	ester
1	Course:			Planned group s	sizes	Scop	e	Actual of time / cl	lassroom	Self-stud	ly
	Lecture			60 students		0	SCH	0	h	0	h
	Tuition in	n semina	rs	30 students		0	SCH	0	h	0	h
	Exercise			20 students		0	SCH	0	h	0	h
	Practical	or semin	nar	15 students		2	SCH	30	h	120	h
	Supervise	ed self-st	udy	60 students		0	SCH	0	h	0	h
	project. their pro	They ac ject resumination	quire thults with no leads	e methods and the competence to the help of sure to linked thin hication skills.	o work g itable so	goal-ori oftware	iented in tools (e.	small org	anisational werPoint).	units and Critical co	to presen
	- Pro										
	- Stru - Sequeng - Lite - Eng	ucturing	of problog g educar eview g work	n product/projec em solving usin tion				ample froi	n everyday	life in	
4	- Stru - Sequeng - Lite - Eng - Pre Forms of	ucturing quence of timeering erature regineering sentation teaching	tasks in problem of problem of problem of the contract of the	n product/projectem solving using tion	g a simp			ample froi	n everyday	life in	
	- Stru - Sequeng - Lite - Eng - Pre Forms of	ucturing quence of tineering erature regineering sentation teaching with pre	tasks in problem of problem of the control of the c	n product/projectem solving usin tion iques	g a simp			ample from	n everyday	life in	
4 5	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v	ucturing quence of tineering erature regineering sentation teaching with pre	g tasks in of probleg g educa- review g work on techn g: ssentation	n product/project em solving usin tion iques on of the project	g a simp			ample fron	n everyday	life in	
	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v Participal	ucturing quence of tineering erature regineering sentation teaching with pre	tasks in of probleg educate eview g work in technics: sentation irements None	n product/project em solving using tion iques on of the project	g a simp			ample froi	n everyday	life in	
5	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v Participal Formal: Content:	queturing quence or ineering erature regineering sentatio teaching with pretion requ	tasks in of probleg educate eview g work in technics: sentatic irrements None None	n product/project em solving using tion iques on of the project	g a simp			ample from	n everyday	life in	
	- Strue Sequenger - Lite - Enger - Preforms of Project value - Formal: - Content: - Sequenger - Forms of Project value - Forms of Forms	quence of time ring gineering sentatio teaching with pretion requ	tasks in of probleg educate eview g work in technics: sentatic irrements None None	n product/project em solving using tion iques on of the project	g a simp			ample from	n everyday	life in	
5	- Strue Sequeng - Lite Eng - Pre Forms of Project v Participat Formal: Content: Forms of	quence of time ring gineering sentatio feaching with pretion required assessm work	tasks in of probleg educareview g work in technics: sentation irements None None ent:	n product/projectem solving using tion iques on of the projectes:	g a simp			ample from	n everyday	life in	
5	- Strue Sequeng - Lite Eng - Pre- Forms of Project v Participal Formal: Content: Forms of Project v	ucturing quence or ineering serature regineering sentatioo teaching with pretion required assessm work	tasks in of probleg educareview g work n technists sentation irements None None ent:	n product/projectem solving usin tion iques on of the projectes:	g a simp	ple tech		ample from	n everyday	life in	
5	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module	ucturing quence or ineering erature regineering sentation teaching with pretion requestion requesti	stasks in for problem of problem	n product/projectem solving usin tion iques on of the projects: of credit points: ass and course a	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module	ucturing quence or ineering erature regineering sentation teaching with pretion requestion requesti	tasks in for probleg educareview g work in technig: ssentationirements None None ent:	n product/projectem solving usin tion iques on of the projects: of credit points: ass and course ase (in the following	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7	- Strue Sequeng - Lite Eng - Pre Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module Applicati Renewal	quence of the control	stasks in of probleg educate view g work in technics: sentation irements None None ent: ne award attion page module rgies B.	n product/projectem solving usin tion iques on of the projects: of credit points: ass and course ase (in the following	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7 8	- Strue Sequeng - Lite Eng - Pre- Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module Applicati Renewal Importan accordin	ucturing quence of the control of th	stasks in of probleg educate view g work in technic sentation irements. None None ent: ne award attion pare module rgies B. a grade for RPO	n product/projectem solving using tion iques on of the projectes: of credit points: ass and course ase (in the following Eng.	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7 8	- Strue Sequeng - Lite Eng - Pre- Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module Applicati Renewal Importan accordin	ucturing quence of ineering sentation sentation teaching with pretion requirements on of the ble Energy to BR coordinate of the ground teaching	stasks in of probleg educate view g work in technics: sentation irements None None ent: e award ation pare module rigies B. grade for RPO oor:	n product/projectem solving usin tion iques on of the projectes: of credit points: ass and course are (in the following Eng. or the final grade:	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7 8 9	- Strue Sequeng - Lite Eng - Pre- Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module Applicati Renewal Importan accordin Module c Prof. Dr	ucturing quence of ineering erature regineering sentation teaching with pretion requirements on of the examination of the ble Energy to BR coordinatesIng. E	stasks in of probleg educareview g work in technics: sentationirements None None ent: e award ation pare module rgies B. grade for RPO or: va Schv	n product/projectem solving using tion iques on of the projectes: of credit points: ass and course ase (in the following Eng.	t results	ent	nnical ex	ample from	n everyday	life in	
5 6 7 8	- Stru - Sequeng - Lite - Eng - Pre Forms of Project v Participal Formal: Content: Forms of Project v Prerequis Module Applicati Renewal Importan accordin Module of Prof. Dr	assessm work examination of the ble Energy to BR coordinated.—Ing. E	stasks in for probleg educar review g work in techniques sentation irrements. None None ent: The award action page module rigies B. grade for RPO for: va Schvitt.	n product/projectem solving usin tion iques on of the projectes: of credit points: ass and course ase (in the following Eng. or the final grade: wenzfeier-Hellka	t results ssessme	ent rogramn	mes)			life in	
5 6 7 8 9	- Strue Sequeng - Lite Eng - Pre- Forms of Project value Formal: Content: Forms of Project value Application Renewal Important according Module of Prof. Drother infolio Literature - Strue Stru	quence of the cardinal to the coordinate of the	stasks in of probleg educareview g work in technics: sentation problem in technics: sentation irrements: None None ent: ne award attion page module regies B. grade for RPO tor: va Schwin: ne annote annote annote annote in the sentation page.	n product/projectem solving using tion iques on of the projectes: of credit points: ass and course ase (in the following Eng. or the final grade: wenzfeier-Hellka	t results ssessme	ent rogramn	mes)			life in	
5 6 7 8 9	- Strue Sequeng - Lite Eng - Pre- Forms of Project value Formal: Content: Forms of Project value Application Renewal Important according Module of Prof. Drother infolio Literature - Strue Stru	ucturing quence of timeering sentation teaching with pretion requirements on of the ble Energy to BR coordinate. Ing. Exportation re will be eparing	stasks in of probleg educareview g work in technics: sentation problem in technics: sentation irrements: None None ent: ne award attion page module regies B. grade for RPO tor: va Schwin: ne annote annote annote annote in the sentation page.	n product/projectem solving usin tion iques on of the projectes: of credit points: ass and course ase (in the following Eng. or the final grade: wenzfeier-Hellka	t results ssessme	ent rogramn	mes)			life in	

Proj	ect 2								PR2	
Iden num	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequenc	y of the offer	Durati	on:
122	1	150 h	5	5th	sem.		Annual (Winter))	1 semester	
1	Course:		Planned group s	sizes	Scope	e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		0	SCH	0	h	0	h
	Tuition in	seminars	30 students		0	SCH	0	h	0	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical of	or seminar	15 students		2	SCH	30	h	120	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	project. Their proj and exar	They acquire ect results wination lea	the methods and the competence to with the help of sunds to linked thir nunication skills.	o work itable se	goal-ori oftware	ented in tools (e.	small org	ganisational (werPoint). (units and Critical c	to preser ompariso
3	- Stru - Proceduce - Lite - Eng		s in product/projectem solving using w rk			mple fro	m everyd	ay life in en	gineerin	o o
4	Forms of	U	•							
			tion of the project	results						
5		on requireme								
	Formal:	No								
-	Content:	No:	ne							
6	Project w									
7	Prerequisi	te for the awa	ard of credit points:		-m+					
8	Application		pass and course a ule (in the following B Eng			nes)				
9	Importanc		e for the final grade:							
10	Module co	oordinator:								
11	Prof. Dr. Other info		hwenzfeier-Hellk	amp						
	Faculty thim/hers	_	ach case by a lectu	irer fron	n the stu	ıdy prog	gramme, c	hosen by the	student	
	Language:									
12										

	omatic Cor	ntrol Enginee	ring						RT	
Iden num	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequency	of the offer	Duratio	on:
123:		150 h	5	4th	sem.		Annual (Summer	-)	1 seme	ester
1	Course:		Planned group s	sizes	Scop	e	Actual of time / cl	assroom	Self-stuc	dy
	Lecture		60 students		2	SCH	30	h	45	h
		n seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
		or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
		outcomes/com	petences:							
	- the	hods basic feature	gle-loop control l		means	of root l	ocus curve	e and freque	ency resp	onse
	- Des don - Pro - Des met	scription and nain perties of sin sign of single chods	f control enginee analysis of linear gle-loop control l -loop control loop	time-in	the time	e and fre	quency do	omain		
	Forms of			10						
	T .	_			1					
		with accompa	anying seminar ex		and pra	ecticals				
	Participat	with accompa	nts:		and pra	ecticals				
		with accompation requirement Nor	nts:	es 1 (114	16 or 11	50) and				
5	Participal Formal: Content:	with accompa- tion requireme Nor Mod Eng assessment:	nts: dules Mathematic ineering 1 (1071	es 1 (114 or 1074	46 or 11	50) and (1075 or				
	Participat Formal: Content: Forms of Written Prerequis	with accompation requireme. Nor Modern Enguments assessment: examination; ite for the awa	nts: ne dules Mathematic ineering 1 (1071 each with prelim rd of credit points:	es 1 (114 or 1074	46 or 11 -) and 2	50) and (1075 or				
	Participat Formal: Content: Forms of Written Prerequis Module	with accompation requireme. Nor Modern Engument: examination; ite for the awa examination	each with preliming of credit points:	es 1 (114 or 1074 inary ex	46 or 11 and 2 caminat	50) and (1075 or				
; ;	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica	with accompation requireme Nor Moderng assessment: examination; ite for the awa examination on of the mode al Engineerin	each with preliming of credit points: pass with preliming le (in the following g B.Eng. and Ren	s 1 (114 or 1074 inary ex g study p ewable	46 or 11 and 2 saminat aminatio	50) and (1075 or	1077) sho			
; ;	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Importan	with accompation requireme Nor Moderng assessment: examination; ite for the awa examination on of the mode al Engineerin ce of the grade	each with preliming of credit points: pass with preliming le (in the following)	s 1 (114 or 1074 inary ex g study p ewable	46 or 11 and 2 saminat aminatio	50) and (1075 or	1077) sho			
j	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Importan accordin	with accompation requireme. Nor Nor Moderne assessment: examination; ite for the awa examination on of the moderne al Engineering ce of the grade gg to BRPO	each with preliming of credit points: pass with preliming le (in the following g B.Eng. and Ren	s 1 (114 or 1074 inary ex g study p ewable	46 or 11 and 2 saminat aminatio	50) and (1075 or	1077) sho			
5	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Importan accordin Module of	assessment: examination; ite for the awa examination on of the mode al Engineering ce of the grade g to BRPO coordinator:	each with preliming of credit points: pass with preliming le (in the following B.Eng. and Renfor the final grade:	s 1 (114 or 1074 inary ex g study p ewable	46 or 11 and 2 saminat aminatio	50) and (1075 or	1077) sho			
5	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Importan accordin Module of Prof. Dr Other inf	assessment: examination; ite for the awa examination on of the mode al Engineerin ce of the grade gg to BRPO coordinator:Ing. Dirk Wormation:	each with preliming of credit points: pass with preliming le (in the following grade: past before the final grade: feidemann	inary exnary example with the second	46 or 11 and 2 caminat amination	50) and (1075 or ion on nes) es B.Eng	1077) sho			
5 7 7 10	Participat Formal: Content: Forms of Written Prerequis Module Applicati Electrica Importan accordin Module of Prof. Dr Other inf	with accompation requirements Normal Modern	each with preliming of credit points: pass with preliming le (in the following B.Eng. and Renfor the final grade:	inary exnary example with the second	46 or 11 and 2 caminat amination	50) and (1075 or ion on nes) es B.Eng	1077) sho			

L T E P S S	ecture Fution in Exercise Fractical of Exercise Fractical of Exercise Exerc	r seminar I self-study outcomes/coments know the to current te	Credits: 5 Planned group s 60 students 30 students 15 students 60 students erange of activities activit	1st s	Scop 2 2 0 0 0		Annual (Winter)	contact lassroom	1 sem Self-stu 45 45	nester
1 C L T E P S 2 L T S C C T	ecture Futtion in Exercise Fractical of Exercise Fractical of Exercise Exer	seminars r seminar I self-study outcomes/coments know the to current testy and their of	Planned group s 60 students 30 students 20 students 15 students 60 students erange of activities a	sizes	Scop 2 2 0 0	SCH SCH	Actual time / c teachin 30 30 0	contact lassroom g h	Self-stu 45 45	h h
L T E P S S	ecture Futtion in Exercise Fractical of Exercise Fractical of Exercise Exer	r seminar I self-study outcomes/coments know the to current te	60 students 30 students 20 students 15 students 60 students petences: are range of activities achnological prob		2 2 0 0	SCH SCH	time / c teaching 30 30 0	lassroom g h h	45 45	h
T E P S S 2 L T S S C C T	Exercise Tractical of upervised the stude ensitised omplexithey have	r seminar I self-study outcomes/coments know the to current te	30 students 20 students 15 students 60 students petences: are range of activities activities and activities activities are range of activities.	4:£	0 0	SCH SCH	30 30 0	h h	45	
E P S S 2 L T S S C C T T	ractical o upervised earning of the stude ensitised omplexit	r seminar I self-study outcomes/coments know the to current te	20 students 15 students 60 students petences: are range of activities activit	f	0	SCH	0			h
P S 2 L T S C C T	upervised earning of the stude ensitised omplexithey have	d self-study outcomes/com ents know the to current te	15 students 60 students petences: he range of activitechnological prob	f	0			h		1
S 2 L T so cr	upervised earning of the stude ensitised omplexion	d self-study outcomes/com ents know the to current te	60 students petences: ne range of activitechnological prob	tion of	Ů	SCH	0	11	0	h
2 L T so	earning of the stude ensitised omplexithey have	outcomes/coments know the to current to the total their of the total the total their of the total the total their of their of their of the total t	petences: ne range of activi	4:£	0		U	h	0	h
T so c	The stude ensitised omplexion	ents know the to current to ty and their o	e range of activi echnological prob	4:¢		SCH	0	h	0	h
Se Co	ensitised omplexithey have	to current to	echnological prob	4: C .	•					
3 C	Contents:		he basics of scien ing them in prese	hnical s tific wo	ignifica	nce. can use t	his as a b	asis for wor	king out	issues in
	SectorLaborRangerExcursionIntro	or analysis: Sour market in ge of tasks/joursion to regi	sential of the ener Solar energy, win the sectors ob market prospec- tional companies / ne basics of scien	d power ets for the	r, hydro ne engir tation b	power, g neer in th y externa	geotherma e field of al speaker	renewable	energies	
4 F	orms of to	eaching:								
L	ecture w	ith accompa	anying seminar. E	Event wi	th activ	e particij	pation of	all students.		
5 P	articipatio	on requiremen	nts:							
	ormal:	Non	· -							
	Content:	Non	e							
9		ssessment:			_					
			xamination or pro	oject wo	rk					
	_		rd of credit points:							
8 A	pplication	n of the modu	pass and course a			nes)				
9 In	mportance	-	3.Eng. for the final grade:							
		to BRPO								
		ordinator:	wanzfaior Hallle	amp						
	Prof. DrIng. Eva Schwenzfeier-Hellkamp Other information:									
	iterature		ounced at the beg	ginning	of the c	ourse. In	dependen	t research		

12 Language:
German

Sense	ors								SEN	
Identi numb	ification er:	Workload:	Credits:	Study	y semes	ter:	Frequency	y of the offer	Durati	on:
1243		150 h	5	5th s	sem.		Annual (Winter)		1 sem	ester
1	Course:		Planned group s	sizes	Scop	e	Actual of time / cl	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		0	SCH	0	h	0	h
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
2	_	outcomes/com	petences: overview of th		ļ	-1				ļ
	The stud	lents have a cs in sensor d	sical function. basic knowledglevelopment. The of renewable en	y are al	ole to s	olve prac	ctical prob	lems, espec	ially in t	the field of
	- Fun rene Opt Sen Sen Sen	ctionality and ewable energi- ical transduce sors for tempo sors: for positions sors for detections	overview of usable application of sees, e.g. ers and sensors erature measurention detection and ting paths and an mical and biological	nent I for rec	ording	, especia mechan	illy in the f	uidic variab	les,	
4	Forms of	teaching								
+	Lecture,	Ū								
5		ion requiremen	ts:							
	Formal:	Non								
	Content:	1064 1074 1077 1169 1198	ules: 4 Electronics; 5 Electrical Engin 7 Electrical Engin 9 Metrology; 8 Physics 1; 9 Physics 2;							
6	Forms of assessment:									
ļ	Oral exa	mination								

7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Sonja Schöning
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

	nnical Engl	lish 1							FSE1	
Ident	rification	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:
1085		150 h	5	1st or	: 3rd se	·m.	Annual (Winter)		1 semes	ster
1	Course:	1	Planned group si	Planned group sizes		<u> </u>	Actual contact time / classroom teaching		Self-study	
	Lecture				0	SCH	0	h	0	h
	Tuition in	n seminars	30 students		4	SCH	60	h	90	h
	Exercise				0	SCH	0	h	0	h
		or seminar			0	SCH	0	h	0	h
	Supervise	ed self-study	30 students		0	SCH	0	h	0	h
	- Mar ar a - Pe	resentations, Iethodologic nalysis of tec way that is a ersonal com	teamwork and pro- teamwork and pro- tal competence: The chnical texts and for appropriate for the operation of the petence: They are structure authentical	ject wor ney use to r solving target gr able to	k. targeted g content oup. take	d strateg xtual tas responsi	gies for corks. They can	ntent acqui an present	sition and technical i	critical ssues in
3		he students o	can describe relevan	nt engin	eering	disciplir	nes.			neering;
3	- T T. di m tr - T. di	he students of hey master imensions a naterials; man ansmission). hey possess iscussing dia	the core terminole and shapes; mathe nufacturing and autors interdisciplinary	nt engine ogy of ematical tomation	eering the tec operat operat; energ	disciplir chnical tions; fo	nes. topic (e.g. orces and lectricity; le	base unit mechanisr ogistics; da	s in engi ns; prope ata proces:	erties of sing and
3	- T. di m tr - T. di	he students of hey master imensions a laterials; man ansmission). hey possess iscussing dia	the core terminole and shapes; mathe nufacturing and autors interdisciplinary agrams).	nt enginogy of ematical tomation	eering the tec opera ; energ (email	disciplir chnical cions; fo gy and e ing; pr	nes. topic (e.g. orces and lectricity; le	base unit mechanisr ogistics; da	s in engi ns; prope ata proces:	erties of sing and
	- T. di m tr T. di Gi Forms of Seminar Semeste	he students of hey master imensions a naterials; man ansmission). hey possess iscussing dia teaching: -based teach r project (As	the core terminole and shapes; mathe nufacturing and autorises interdisciplinary agrams).	nt enginogy of ematical tomation	eering the tec opera ; energ (email	disciplir chnical cions; fo gy and e ing; pr	nes. topic (e.g. orces and lectricity; le	base unit mechanisr ogistics; da	s in engi ns; prope ata proces:	erties of sing and
4	- Todi m tr Todi di Forms of Seminar Semeste	he students of hey master imensions a naterials; man ansmission). They possess iscussing dia teaching: -based teach r project (Astion requirement in the possess is the project (Astion requirement in the project in in th	the core terminole and shapes; mathe nufacturing and autorises interdisciplinary agrams). sing, individual and assignment) ents:	nt enginogy of ematical tomation skills	eering the tec operation; energy (email)	disciplir chnical cions; fo gy and e ing; pr	nes. topic (e.g. orces and lectricity; le oject work	base unit mechanisr ogistics; da	s in engins; prope ata process ation tecl	erties of sing and
4	- T. di m tr T. di di m tr T. di	he students of hey master imensions a naterials; man ansmission). They possess iscussing dia teaching: -based teach r project (Astion requirement in the possess is the project (Astion requirement in the project in in th	the core terminole and shapes; mathe nufacturing and autorises interdisciplinary agrams).	nt enginogy of ematical tomation skills	eering the tec operation; energy (email)	disciplir chnical cions; fo gy and e ing; pr	nes. topic (e.g. orces and lectricity; le oject work	base unit mechanisr ogistics; da	s in engins; prope ata process ation tecl	erties of sing and

7	Prerequisite for the award of credit points:
1	
	70% attendance and active participation; passed semester project and written exam
8	Application of the module (in the following study programmes)
	Electrical Engineering B.Eng, Engineering Computer Sciences B.Eng and Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	OStR Cornelia Biegler-König
11	Other information:
	Literature will be announced at the beginning of the course. Textbook, additional
	materials, intranet self-study courses
12	Language:
	English

I eci	nnical Eng	lish 2							FSE2	,	
Iden num	tification	Workload:	Credits:	Study	semes	ter:	Frequenc	y of the offer	Durati	ion:	
1086		150 h	5	5 4th or			Annual (Summe	r)	1 sem	nester	
1	Course:		Planned group s	group sizes Scope		Actual time / c teachin	lassroom	Self-stu	ıdy		
	Lecture				0	SCH	0	h	0	h	
	Tuition is	n seminars	30 students		4	SCH	60	h	90	h	
	Exercise				0	SCH	0	h	0	h	
Practica		or seminar			0	SCH	0	h	0	h	
	Supervis	ed self-study	f-study 30 students mes/competences:			SCH	0	h	0	h	
		ent them shorti	y and concisely,	both in	speakii		writing.	or essential : They establ		r contex	
3	and r Persona English Contents - Stude - They autor They po sectors,	make a critical l competence: sources. : ents can active master the comated systems; sssess interdiscipations.		nternati r dealing ngs and g. projec	onal cog with trends	onference problem).	esoriented	They estable proach to me	(e.g. Inc	authent	
3	and r Persona English Contents - Stude - They autor They po sectors, persuasi	make a critical l competence: sources. : ents can active master the comated systems; essess interdiscinanufacturing ion strategies).	assessment. They show Engly participate in ite terminology for discussing readiplinary skills (e.g pro-cesses; pitches)	nternati r dealing ngs and g. projec hing a te	onal cog with trends the manachnica	onference problem). agement;	esoriented	They estable proach to me	(e.g. Inc	authent	
1	and r Persona English Contents - Stude - They autor They po sectors, persuasi Forms of Seminar Seminar	make a critical l competence: sources. : ents can active master the comated systems; ssess interdiscimanufacturing ion strategies). : teaching: -based teaching	dy participate in ite terminology for discussing readificationary skills (e.g. pro- cesses; pitches)	nternati r dealing ngs and g. projec hing a te	onal cog with trends the manachnica	onference problem). agement;	esoriented	They estable proach to me	(e.g. Inc	authent	
1	and r Persona English Contents - Stude - They autor They po sectors, persuasi Forms of Seminar Seminar	make a critical l competence: sources. : ents can active master the comated systems; essess interdiscinanufacturing from strategies). : teaching: -based teac	assessment. They show Enginery show Enginery skills (e.g. pro- cesses; pitches) pro- cesses; pitches; and show the show	nternati r dealing ngs and g. projec hing a te	onal cog with trends the manachnica	onference problem). agement;	esoriented	They estable proach to me	(e.g. Inc	authent	
ı	and r Persona English Contents - Stude - They autor They po sectors, persuasi Forms of Seminar Seminar	make a critical competence: sources. : ents can active master the comated systems; ssess interdiscimanufacturing ion strategies). : teaching: -based teaching: project (Assignment of the competence of the comp	assessment. They show Engling participate in its terminology for discussing readification of the pro-cesses; pitch pro-c	nternati r dealing ngs and g. project hing a te	onal cog with trends to manachnica	onference problem). agement; Il produc	esoriented business t; confere	case studies	(e.g. Inc	dustry 4.	
	and r Persona English Contents - Stude - They autor They po sectors, persuasi Forms of Seminar Seminar Seminar Formal:	make a critical competence: sources. : ents can active master the comated systems; ssess interdiscimanufacturing ion strategies). : teaching: -based teaching: project (Assignment of the competence of the comp	dy participate in it the terminology for discussing reading plinary skills (e.g. pro- cesses; pitch grament) g, individual and grament) is: ules: Technical Engli	nternati r dealing ngs and g. project hing a te	onal cog with trends to manachnica	onference problem). agement; Il produc	esoriented business t; confere	case studies	(e.g. Inc	dustry 4.	

7	Prerequisite for the award of credit points:
	70% attendance and active participation, passed semester project and written exam
8	Application of the module (in the following study programmes)
	Electrical Engineering B.Eng, Engineering Computer Sciences B.Eng and Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	OStR Cornelia Biegler-König
11	Other information:
	Literature will be announced at the beginning of the course. Textbook, course
	supplementary materials self-study courses
	Study programmes in Electrical Engineering, Engineering Computer Sciences, Renewable Energies:
	Elective subject
12	Language:
	English

Text	ile Technol	logies							TEX		
Ident	tification ber:	Workload:	Credits:	Study	y semester:		Frequency of the offer		Duration	n:	
6004	1	150 h	5	4th o	r 6th se	em.	Annual (Summer	·)	1 seme	ster	
1	Course:	l	Planned group six	zes	Scope	2)	Actual c time / cl teaching	assroom	Self-stud	у	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition in seminars Exercise		30 students		2	SCH	30	h	45	h	
			20 students		0	SCH	0	h	0	h	
	Practical of	or seminar	15 students		0	SCH	0	h	0	h	
	Supervise study	Supervised self 60 students study Learning outcomes/competences:			0	SCH	0	h	0	h	
	importan topic froi	t textile testin	chain, comparin g procedures and hain independent	recent							
3	Contents:										
	textiles, functiona	finishing, ma al textiles; ph	spinning, seconda inufacture; textilo ysical and other along the textile	e mach propert	ines; s	ustainal	oility in tl	ne textile o	chain; int	elligent	
4	Forms of	teaching:									
	Lecture,	hands-on sem	inar								
5	Participati	ion requirement	s:								
	Formal:										
	Content:										
6	Forms of	assessment:		· ·							
	Project w										
7	_		d of credit points:								
		examination p									
8			e (in the following		_						
			ogy B.Sc., Mecha	atronics	B.Sc.,	Renew	able Energ	ies B.Eng. a	and Indus	trial	
		ing and Mana									
9	according	g to BRPO	for the final grade:								
10		oordinator: Dr. Andrea E	hrmann								
11	Other info	ormation:									
12	Language	:									
	English										

Ther	mal Use o	f Renewable	Energies						TNE	
Ident	ification per:	Workload:	Credits:	Study	y semes	ter:	Frequency	y of the offer	Duratio	on:
1266	5	150 h	5	6th s	sem.		Annual (Summer	r)	1 seme	ester
1	Course:		Planned group s	sizes	Scop	e	Actual of time / cl	lassroom	Self-stud	ly
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in	seminars	30 students		1	SCH	15	h	22.5	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	22.5	h
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h
	dimension thermal	oning of corr simulation m	energy use. The si esponding systen odels and can ana	ns. They	have	acquired	I practical	skills in th	e creatio	n of sola
3	Contents: - Heating demand in residential buildings - Solar thermal use of renewable energies in the low- and high-temperature range (including domestic hot water heating and backup heating, swimming pool heating, solar thermal power plants) - Geothermal use. Functioning of the heat pump (geothermal heating and cooling) - Practical course (e.g. experiments and simulations on the dimensioning of solar thermal systems for heating drinking water and swimming pools as well as on the functioning and determination of the coefficients of performance of a heat pump)									
4	Forms of	-								
		seminar, pra								
5		ion requiremen	nts:							
	Formal: Content:	119	dules: 8 Physics 1; 2 Physics 2;							
6	Forms of	assessment:								
	Written	or oral exami	nation; in each ca	ase with	prelim	inary exa	amination	performanc	e	
7			rd of credit points:			<u>. </u>				
			pass with prelimi							
8	Applicati	on of the modu	ale (in the following	g study p	rogramı	nes)				
_			g B.Eng. and Ren		Energi	es B.Eng	<u>.</u>			
9	_	_	for the final grade:							
		g to BRPO								
10	Module c	oordinator: . rer. nat. Son								

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

The	rmodynam	ics 1							TD1		
Identification number:		Workload:	Credits:	Study	semest	er:	Frequency	y of the	Duratio	n:	
126		150 h	5	2nd,4th or 6th sem.		5th	Annual (Summer)		1 sem	1 semester	
1	Course:		Planned group si	zes	Scope	e	Actual of time / cl	assroom	Self-stud	ly	
	Lecture		60 students		2	SCH	30	h	45	h	
		n seminars	30 students		2	SCH	30	h	45	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical	al or seminar 15 students			0	SCH	0	h	0	h	
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h	
3	Contents: - Basic state - 1st la - Ideal of sta - 2nd l - Circu and d - Real data of	I situations. nicative compute a communicative a communicative accommunication beginners concepts such variables, prower of thermody gases: Thermody accompany of thermody and thermody and thermody accompany of thermody and thermody accompany of thermody accompany of the processes: diesel process.	and confidently p h as system, equilicess variables wor ynamics: stationar al / caloric equations ses dynamics: Meanin a simple reversible Terms: Work, per es of state in the ty and tables	brium, ck and l ry / mov n of sta g, entro	state vaneat ving clote of ide	mics, ca fend ques ariables, osed systeal gases processe gree of e	changes, patems, statics, specifical	orocesses, onary flow heat capac	mentativel n nature. thermal and v processes ity, simple arnot, Joul	d calori	
		teaching:									
4		and semmar tion requiremen	ts.								
	Participat										
	Participat Formal:	Non									
		Non- Non-									
5	Formal: Content:										
5	Formal: Content: Forms of	Non-assessment:		n							
5	Formal: Content: Forms of Written	Non assessment: examination of	e	n							
4 5 6	Formal: Content: Forms of Written Prerequis Module	Non- assessment: examination of ite for the awar examination p	e or oral examination d of credit points:								

9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. Peter Charles
11	Other information:
	Literature will be announced at the beginning of the course. Renewable Energies study
	programme: Possible elective subject
12	Language:
	German

Elec	ctive Modul	le							WM				
Iden num	tification ber:	Workload:	Credits:	Study	semeste	er:	Frequency of the offer		Duration:				
901	9	150 h	5	5th o	5th or 6th sem.		each seme	ster	1 seme	ster			
1	Course:		Planned group si	zes	Scope	,	Actual co		Self-stud	y			
	Lecture		60 students			SCH		h		h			
	Tuition in	seminars	30 students			SCH		h		h h			
	Exercise		20 students			SCH		h		h			
	Practical	or seminar	15 students		0	SCH	0	h	0	h			
	Supervise	d self-study	60 students			SCH		h	h				
2	Learning	outcomes/comp	petences:				•						
3	Contents:												
4	Forms of	teaching:											
5	Participat	Participation requirements:											
	Formal:												
	Content:												
6	Forms of	assessment:											
7	Prerequis	ite for the awar	d of credit points:										
8	Application	on of the modul	le (in the following	study pr	ogramm	ies)							
		ole Energies B		• •	-								
9	Importance	ce of the grade	for the final grade:										
10		oordinator:											
11	Other info		wenzfeier-Hellka	mp									
11													
12	Language	:											
	German												

Wir	nd and Hyd	ropower							WWI	ζ.	
Iden	tification	Workload:	Credits:	Stud	y semest	ter:	Frequenc	y of the offer	Durati	ion:	
128		150 h	5	5 5th		sem.			1 sem	nester	
1	Course:		Planned group s	sizes	Scop	e	Actual of time / contents	lassroom	Self-stu	ıdy	
	Lecture		60 students		2	SCH	30	h	45	h	
	Tuition i	n seminars	30 students		2	SCH	30	h	45	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical	or seminar	15 students		0	SCH	0	h	0 h 0 h		
	Supervis	ed self-study	60 students		0	SCH	0	h	0	h	
3	Contents	:	turbine designs.								
		Generator con Grid connectic Control strate Wind statistic Wind farms, of Environmenta cycle analysis Approval proof Physical princ pressure surge Typical design Environmenta Promotion of Volatility and	ciples of wind turnicepts for wind turnicepts for wind turnices, yield forecast offshore all factors of wind turnicedure ciples of hydropo	urbines ces bines turbine ower pla nes, hydropower hydropon it	es: noise nts (Bea dropowe plants ower un	e, shadov rnoulli's er plants	w, effects theorem), and pump German la	specific eff ped storage p aw (EEG)	ects (ca	vitation,	
4		teaching:	1. 1.								
5		seminar-base									
5	Formal:	None									
	Content:		ics 1 (1198) and	2 (1202	2), Fund	lamental	s of Energ	gy Technolo	gy		
6		assessment:	•								
	Written	examination o	r oral examination	on							

7	Prerequisite for the award of credit points:
	Module examination pass
8	Application of the module (in the following study programmes)
	Renewable Energies B.Eng.
9	Importance of the grade for the final grade:
	according to BRPO
10	Module coordinator:
	Prof. Dr. rer. nat. Jörn Loviscach
11	Other information:
	Literature will be announced at the beginning of the course.
12	Language:
	German

Circ	ular Econo	omy According	g to Cradle to Cr	adle					ZW	
Iden num	tification ber:	Workload:	Credits:	Stud	ly semes	ter:	Frequency	y of the offer	Durati	on:
1324	4	150 h	5	5th	Semeste	er	Annual (Winter)		1 sem	ester
1	Course:		Planned group	sizes	Scop	e	actual c time / cl teaching	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	45	h
	Tuition in seminars		30 students		2	SCH	30	h	45	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical or seminar		15 students		0	SCH	0	h	0	h
	Supervise study	ed self outcomes/comp	60 students		0	SCH	0	h	0	h
3	Contents									
	- Proce - Conc - Influ - Cons and b - Ansv	edure for the depets for decourence of digital dideration of crousiness model wers to the imp. What are the education was the economy and the economy and downcycling? How do we for innovation that less by represented the economy and the economy are economy and the economy and the economy and the economy are economy are economy and the economy are economy are economy are economy are economy and the economy are economy a	ortant questions effects of the cur lesign material c and the environn to things better is	ew proogrowth 74.0 for new: rent lineycles in nent? n a sust	from ra produce ear ecor such a ainable v resour pact and	w mater one with a comic sy way tha way and ce econd quality	stem and I t they have	ns and mater now can we e a positive : than just red	overcon impact of luce, avo	ne it? on people, oid and om for
4		teaching: seminar-base	d teaching with	exercise	s					
	Lecture, Participa	_	d teaching with ets:	exercise	es					
4 5	Lecture, Participa Formal:	seminar-base		exercise	es					
	Lecture, Participa Formal: Content:	seminar-base		exercise	es					

7	Prerequisite for the award of credit points:					
	Module examination pass					
8	Application of the module (in the following study programmes)					
	Renewable Energies B.Eng.					
9	Importance of the grade for the final grade:					
	according to BRPO					
10	Module coordinator:					
	Prof. DrIng. Eva Schwenzfeier-Hellkamp					
11	Other information:					
12	Language:					
	German					

Stat	e Space Co	ntrol							ZRG		
Identification number: 1287		Workload:	rkload: Credits:		Study semester:		Frequency of the offer		Duration:		
		150 h	5	5th	5th sem.		Annual (Summer)		1 semester		
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		2 SCH		30 h		45	h	
	Tuition in seminars		30 students		1	SCH	15	h	22.5	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical or seminar		15 students		1	SCH	15	h	22.5	h	
	Supervise	ed self-study	60 students		0	SCH	0	h	0	h	
3	Learning outcomes/competences: The students master - the description of linear single- and multi-variable systems in the state space, - the transformation of the state space representation to diagonal, Jordan, control, observation normal form and input/output normal form as well as the determination of the corresponding transformation matrices, - the design of state controllers, - the design of state observers. Contents: - Description of linear single- and multi-variable systems in the state space - Structural system properties: Stability, controllability, observability - State transformations: Diagonal, Jordan, control, observational and input/output normal shapes - Controller design by means of eigenvalue specification - Design of state observers										
4		Forms of teaching: Lecture with accompanying seminar exercises and practicals.									
5	Participation requirements:										
	Formal: None										
	Content: Control Engineering (1235), Automation Engineering (1015)										
6	Forms of assessment:										
	Oral examination; in each case with preliminary examination										
7	_		rd of credit points:								
		Module examination pass with preliminary examination									
8		Application of the module (in the following study programmes) Renewable Energies B.Eng.									
9	Importance of the grade for the final grade:										
	according to BRPO										
10	Module coordinator:										
	Prof. DrIng. Dirk Weidemann Other information:										
	Other info	armotion:									
11			ounced at the begin	inning	of the co	nurse					
11		e will be ann	ounced at the beg	inning	of the co	ourse.					