## **Appendix A: Course Schedule**

for the study programme Mechanical Engineering M.Sc.

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

First sem	nester							
Module number	Module title	Module ID	L	ST	Е	P/S	SSS	СР
2011	Multi-Body Simulation	MKS	2	0	1	1	0	6
2008	Computational Fluid Dynamics 2	CFD2	2	1	0	1	0	6
2007	Project Module 1	MPR1	0	4	0	0	0	6
9028	Elective Module	WM				0		6
9028	Elective Module	WM				0		6
		•				Tota	I CP:	30
Second s	semester							
Module number	Module title	Module ID	L	ST	Е	P/S	SSS	СР
2003	Finite Elements 2	FE2	2	1	0	1	0	6
2006	Management Skills	MMK	2	2	0	0	0	6
2002	Project Module 2	MPR2	0	4	0	0	0	6
2009	System Simulation	SYS	2	2	0	0	0	6
2004	Tribology	TRI	2	1	0	1	0	6
		•	•		•	Tota	I CP:	30
Third ser	nester							
Module number	Module title	Module ID	L	ST	Е	P/S	SSS	СР
2033	Colloquium	MKO	0	0	0	0	0	6
2034	Master Thesis	MA	0	0	0	0	0	24
						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

Elective N	Elective Modules Mechanical Engineering M.Sc.									
Module	Module title	Module	W/	L	ST	E	P/S	SSS	CP	
number		ID	S							
2005	Automation Systems	AUS	W	2	1	0	1	0	6	
2001	Fibre Composites	FVW	W	2	1	0	1	0	6	
2047	Multiphysics Simulation	MPH	W	2	0	2	0	0	6	

## Appendix B:

## Module catalogue

for the study programme Mechanical Engineering (M.Sc.)

Automation Systems	12
Fibre Composites	13
Finite Elements 2	15
Colloquium	16
Management Skills	17
Master Thesis	18
Multi-Body Simulation	19
Multiphysics Simulation	21
Computational Fluid Dynamics 2	23
Project Module 1	24
Project Module 2	25
System Simulation	26
Tribology	28
Elective Module	29

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

Aut	omation Sy	stems							AUS	
Iden num	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	y of the offer	Duration	n:
200	5	180 h	6	1st o	r 2nd se	em.	Annual (Winter)		1 sem.	
1	Course:		Planned group s	izes	Scope	<u> </u>	Actual of time / co	lassroom	Self-stud	у
	Lecture		60 students		2	SCH	30	h	60	h
	Seminar l	essons	30 students		1	SCH	15	h	30	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical or seminar		15 students		1	SCH	15	h	30	h
	Supervise	upervised self-study 60 students earning outcomes/competences:			0	SCH	0	h	0	h
3	Contents:	·	d to evaluate and	criticall	y comp	pare their	own and	omer peop	ie's solutio	ons.
	frequence harmonic Sensors actuators especiall	y domain (a c balance. Th and actuator c. Digital con y Petri nets. tion to specia	Description and oction plan algebreory of discrete-tis: Process measunmunication technal languages for process.	a, Lapla ime and rement nology (	discrete technology	nsform). e-value logy. El tems). F	Nonlinea systems lectric dri Formal des	r systems: we technologiesign and des	Linearisate ogy, convescription r	erters as
4	Forms of	teaching:								
	Lecture,	seminar lesso	ons and practical	course						
5	Participat	ion requiremen	nts:							
	Formal:	Non								
	Content:	Non	ie							
6		assessment:								
				n						
	Written examination or oral examination  Prerequisite for the award of credit points:									
7	Module examination pass									
	Module		pass	etudy =	Outom	10c)				
7	Module (	on of the modu	pass ale (in the following		-		`			
8	Module of Application BioMech	on of the modu natronics (M.	pass ale (in the following Sc.) and Mechani		-		)			
8	Module of Application BioMech Important	on of the modu natronics (M. te of the grade	pass ale (in the following		-		)			
8	Module of Application BioMech Important according	on of the modulatronics (M. ce of the grade g to MRPO	pass ale (in the following Sc.) and Mechani		-		)			
	Module of Application BioMech Important accordin Module c	on of the mode natronics (M. te of the grade g to MRPO oordinator:	pass the (in the following Sc.) and Mechani for the final grade:		-		)			
8 9 10	Module of Application BioMech Important accordin Module c	on of the modulatronics (M. ee of the grade g to MRPO coordinator:  -Ing. Sebasti	pass ale (in the following Sc.) and Mechani		-		)			
8	Module of Application BioMech Important accordin Module of Prof. Dr. Other info	on of the modulatronics (M. pe of the grade g to MRPO poordinator: -Ing. Sebasti prmation:	pass tle (in the following Sc.) and Mechani for the final grade: an Hoffmann	cal Eng	neering	g (M.Sc.	)			
8 9 10	Module of Application BioMech Important accordin Module of Prof. Dr. Other info	on of the modulatronics (M. ce of the grade g to MRPO coordinator: -Ing. Sebasti ormation: e will be ann	pass the (in the following Sc.) and Mechani for the final grade:	cal Eng	neering	g (M.Sc.	)			

. 101	re Composi	ites							FVW	
Iden num	tification	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Duration	n:
200		180 h	6	1st or	r 2nd s	em.	Annual (Winter)		1 sem.	
1	Course:	1	Planned group s	izes	es Scope Actual cont time / class: teaching			Self-study	/	
	Lecture		60 students		2	SCH	30	h	60	h
	Seminar	lessons	30 students	30 students		SCH	15	h	30	h
	Exercise		20 students	20 students		SCH	0	h	0	h
	Practical	or seminar	15 students		1	SCH	15	h	30	h
	Superviso	ed self-study	60 students		0	SCH	0	h	0	h
3	mechani knowled calculati With the composi special t	ical properties lge for an inition methodolo e knowledge of ites in practice est methods th	the use of fibre and the specia ial evaluation of gy for fibre comp of the strength cri E. Furthermore, the at are important	I failure the po osite co teria, it hey lear	e beha ssible ompone is now n abou	viour of application ents and possible t selecte	f fibre cor lons. Build how to app e for them ed manufac	nposites and an angle and an angle and angle and angle and angle and angle ang	nd can uses, they lead ple compose the use of	se this arn the onents.
	Contents:  - Characteristics of constructive lightweight design - Structure of fibre composites (fibre and matrix types) - Special properties and applications of fibre composite plastics - Micromechanics: mechanical behaviour of unidirectionally reinforced single la - Macromechanics: mechanical behaviour of multilayer laminates - Classic laminate theory - Strength criteria for static, multi-axial loads - Fatigue behaviour of fibre composite plastics - Special features of joining technology and materials testing							ed single la	yers	
	r	plications / Hy	oriu materiais							
4	Forms of	teaching:		COURSE						
	Forms of Lecture, Participa Formal:	teaching: seminar lesso tion requiremen None	ns and practical o	course						
5	Forms of Lecture, Participa Formal: Content: Forms of	teaching: seminar lesso tion requiremen None None assessment:	ns and practical o							
5 6	Forms of Lecture, Participa Formal: Content: Forms of Written	teaching: seminar lesso tion requiremen None None assessment: exam, project	ns and practical ots:							
5 6	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequise	teaching: seminar lesso tion requiremen None None assessment: exam, project site for the awar	ns and practical of ts:  e  work or oral example of credit points:							
5 6 7	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati	teaching: seminar lesso tion requiremen None None assessment: exam, project site for the awar examination propertion of the moduli	ns and practical of ts:  e  work or oral example of credit points:  pass le (in the following)	m	ogramn	nes)				
5 6 7 8	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Mechan	teaching: seminar lesso tion requiremen None None assessment: exam, project site for the awar examination p ion of the modulical Engineerin	ns and practical of the test o	m	ogramn	nes)				
5 6 7 8	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequis Module Applicati Mechan Importan	teaching: seminar lesso tion requiremen None None assessment: exam, project site for the awar examination propertion of the modulical Engineering ce of the grade	ns and practical of ts:  e  work or oral example of credit points:  pass le (in the following)	m	ogramn	nes)				
4 5 6 7 8 9	Forms of Lecture, Participa Formal: Content: Forms of Written Prerequise Module Application Mechan Important according Module of Module	teaching: seminar lesso tion requiremen None None assessment: exam, project site for the awar examination p ion of the modulical Engineerin	ns and practical of the test o	m	ogramn	nes)				

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

Finit	e Elements	: 2							FE2	
Ident numb	ification per:	Workload:	Credits:	Study	semest	ter:	Frequency	y of the offer	Durati	on:
2003	}	180 h	6	1st o	r 2nd s	em.	Annual (Summer)		1 sem.	
1	Course:		Planned group si	izes	Scop	e	Actual of time / cliteaching	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	60	h
	Seminar lessons		30 students		1	SCH	15	h	30	h
	Exercise		20 students		0	SCH	0	h	0	h
	Practical or seminar 15 students			1	SCH	15	h	30	h	
	Supervise	d self-study	60 students		0	SCH	0	h	0	h
	Students learn the theoretical and practical basics of the finite element method for ar linear, thermal and dynamic behaviour  Contents:  Nonlinear materials, strain hardening models, contact modelling, thermal analysis, in integration, modal analysis, fibre composite materials, fracture mechanics									
3	Contents: Nonlinea	r materials, s	namic behaviour	nodels, c	contact	modellir	ng, therma	ıl analysis, i		
	Contents: Nonlinea	r materials, s	namic behaviour	nodels, c	contact	modellir	ng, therma	ıl analysis, i		
	Contents: Nonlinea integratio	r materials, s on, modal ana teaching:	namic behaviour train hardening m llysis, fibre compo	odels, cosite ma	contact	modellir	ng, therma	ıl analysis, i		
3 4 5	Contents: Nonlinea integration Forms of the Lecture,	r materials, s on, modal ana teaching:	train hardening malysis, fibre compo	odels, cosite ma	contact	modellir	ng, therma	ıl analysis, i		
4	Contents: Nonlinea integration Forms of the Lecture,	r materials, son, modal ana teaching: seminar lesso	train hardening malysis, fibre components and practical costs:	odels, cosite ma	contact	modellir	ng, therma	ıl analysis, i		
4	Contents: Nonlinea integratio  Forms of t Lecture, Participati	r materials, son, modal ana teaching: seminar lesson requirement	train hardening malysis, fibre components and practical costs:	oodels, cosite ma	contact	modellir, fracture	ng, therma mechanic	ıl analysis, i		
5	Contents: Nonlinea integration Forms of the Lecture, the Participation Formal: Content: Forms of the Content the Participation the Content the Participation	teaching: seminar lesso on requiremen None Finit	train hardening malysis, fibre compounts and practical costs:	course	contact	modellir, fracture	ng, therma mechanic	ıl analysis, i		
5	Contents: Nonlinea integration Forms of the Lecture, the Participation Formal: Content: Forms of a Written experience of the Participation of the Participat	teaching: seminar lesso on requiremen None Finit	train hardening malysis, fibre compounds and practical costs:  e e elements elastor or oral examination	course	contact	modellir, fracture	ng, therma mechanic	ıl analysis, i		
5	Contents: Nonlinea integration  Forms of the Lecture, the Participation of the Content: Forms of the Written experies of the Prerequision of the P	teaching: seminar lesso on requiremen None Finite assessment: examination of	train hardening malysis, fibre compounds and practical costs:  e e elements elastor or oral examination of credit points:	course	contact	modellir, fracture	ng, therma mechanic	ıl analysis, i		
<ul><li>4</li><li>5</li><li>6</li><li>7</li></ul>	Contents: Nonlinea integration Forms of the Lecture, the Participation of the Content: Forms of the Written experience of the Prerequision of the Module experience of the Prerequision of	teaching: seminar lesso on requirement None Finite assessment: examination of te for the awar examination p	train hardening malysis, fibre compounds and practical control elements elaston or oral examination of credit points:	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
5	Contents: Nonlinea integration Forms of a Lecture, Participation Formal: Content: Forms of a Written e Prerequisi Module e Application	r materials, son, modal ana teaching: seminar lesso for requirement None Finite assessment: examination of the for the awar examination pon of the module.	train hardening malysis, fibre compounds and practical control elements elastor or oral examination of credit points:	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8	Contents: Nonlinea integration Forms of the Lecture, the Participation Formal: Content: Forms of the Written end Prerequisity Module end Application Mechanical integration in the Presentation of the Present	r materials, son, modal ana teaching: seminar lesson requirement None Finite assessment: examination of the for the awar examination pon of the moducal Engineeric	train hardening malysis, fibre compounds and practical contents:  e e e e e e e e e e e e e e e e e e e	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8	Contents: Nonlinea integration Forms of the Lecture, and Participating Formal: Content: Forms of an Written end Prerequising Module end Application Mechanical Importance	r materials, son, modal ana teaching: seminar lesson requirement None Finite assessment: examination of the for the awar examination pon of the moducal Engineerice of the grade	train hardening malysis, fibre compounds and practical control elements elastor or oral examination of credit points:	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8 9	Contents: Nonlinea integration  Forms of a Lecture, Participation Formal: Content: Forms of a Written e Prerequisi Module e Application Importance according	r materials, son, modal analyteaching: seminar lesson requirement None Finite assessment: examination of the for the aware examination properties of the grade grade grade grade grade grade grade analyte on the modular terms of the grade gra	train hardening malysis, fibre compounds and practical contents:  e e e e e e e e e e e e e e e e e e e	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
<ul><li>4</li><li>5</li><li>6</li><li>7</li></ul>	Contents: Nonlinea integration  Forms of a Lecture, Participation  Formal: Content: Forms of a Written e Prerequisis Module e Application  Importance according Module co	r materials, son, modal analyteaching: seminar lesson requirement None Finite assessment: examination of the for the aware examination properties of the grade grade grade grade operations:	train hardening malysis, fibre compounds and practical control elements elastoned of credit points:  Do or oral examination of credit points:	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8 9	Contents: Nonlinea integration  Forms of a Lecture, Participation Formal: Content: Forms of a Written e Prerequisi Module of Application Importance according Module of Prof. Dr.	r materials, son, modal analyteaching: seminar lesson requirement None Finite assessment: examination of the module cal Engineering of the grade of	train hardening malysis, fibre compounds and practical control elements elastoned of credit points:  Do or oral examination of credit points:	course statics,	contact aterials machin	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8 9	Contents: Nonlinea integration Forms of a Lecture, a Participation Formal: Content: Forms of a Written e Prerequisis Module e Application Importance according Module co Prof. Dr Other info	r materials, son, modal analyteaching: seminar lesson requirement None Finite assessment: examination of the for the awar examination point of the modulus cal Engineering of the grade growth of the	train hardening malysis, fibre compounds and practical contents:  e e elements elastor or oral examination of credit points:  bass le (in the following ng (M.Sc.)  for the final grade:	course statics,	machir	modellir, fracture	ng, therma mechanic	ıl analysis, i		
4 5 6 7 8 9	Contents: Nonlinea integration Forms of a Lecture, a Participation Formal: Content: Forms of a Written e Prerequisis Module e Application Importance according Module co Prof. Dr Other info	r materials, son, modal analyteaching: seminar lesson requirement None Finite assessment: examination of the for the awar examination point of the modulus cal Engineering to MRPO pordinator: -Ing. Paul Diomation: e will be annoted the son	train hardening malysis, fibre compounds and practical control elements elastoned of credit points:  Do or oral examination of credit points:	course statics,	machir	modellir, fracture	ng, therma mechanic	ıl analysis, i		

Colle	oquium								МКО	
Identi	ification er:	Workload:	Credits:	Study	semest	er:	Frequenc	y of the offer	Duratio	on:
2033		180 h	6	3rd s	em.		each sen	nester		
1	Course:		Planned group si	zes	Scope	e	/	contact time	Self-stud	dy
	Lecture		60 students		0	SCH	0	h	180	h
	Seminar le	essons	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	d self-study	60 students		0	SCH	0	h	0	h
	Learning outcomes/competences:  The colloquium complements the master thesis and is to be assessed independent determine whether the candidate is capable of orally presenting and independent scientific topic of the master thesis, its subject-related foundations, its interdisciplinatis non-subject-related references, as well as assessing its significance for practice.								ntly just	ifying the
3	- Disp		esis according to the procedure in the sis	-		f the the	esis and th	e questions	that aros	e in the
4	Forms of t	-	he master thesis							
5		on requirement								
5	Formal:	None								
	Content:	Treat	ment of the mast	er thesi	S					
6	Forms of a	assessment:								
7			d of credit points:							
8			e (in the following (M.Eng.), Mecha				.Sc.) and (	Optimisatior	and Sin	nulation
9	Importanc	te of the grade f	for the final grade:							
10	Module co	oordinator:								
		Ing. Jens Hau	ıbrock							
11	Other info		unced at the begi	inning (	of the co	Ource				
	Literature will be announced at the beginning of the course.									
12	Language: German									

Mar	nagement S	Skills							MMK		
Iden num	tification ber:	Workload:	Credits:	Stud	y semes	ter:	Frequency	y of the offer	Duratio	on:	
200		180 h	6	1st o	or 2nd s	em.	Annual 1 set (Summer)		1 sem.	em.	
1	Course:		Planned group s	sizes	Scop	e	Actual of time / conteaching	lassroom	Self-stud	ly	
	Lecture		60 students		2	SCH	30	h	60	h	
	Seminar	lessons	30 students		2	SCH	30	h	60	h	
	Exercise		20 students		0	SCH		h	0	h	
	Practical	or seminar	15 students		0	SCH	0	h	0	h	
	Supervised self-study		60 students		0	SCH	0	h	0	h	
3	Contents Strategic	: c corporate pl	anning, motivation	onal the	ories, le	adership	methods,	values in m	nanageme	ent, socia	
	protection intercult manager	on, energy and tural manager ment, target tr	nodological comp d resource efficien ment, global devo racking and contr management, stro	ncy, sus elopmer olling, t	tainable nt and p palanced	e economoroduction d score c	nic activiti on strategi ard, techn	es, code of oles, project ology excel	German r managen lence lev	eference nent, sel el, chang	
4		teaching:									
_		s, case studies									
5	Formal:	tion requirement Non									
	Content:	Non									
6	Forms of	assessment:									
			combination exa	minatio	n or ora	l examir	nation				
7	•	site for the awar examination	rd of credit points:								
8			le (in the following	g study p	rogramr	nes)					
-			g (M.Eng.), Mech		_		Sc.) and C	Optimisation	and Sim	ulation	
	(M.Sc.)										
9	_										
		ce of the grade									
		ng to MRPO									
		ng to MRPO coordinator:	-								
10	Prof. Dr	ng to MRPO	-								
10	Prof. Dr Other inf	ng to MRPO coordinator: cIng. Bruno I	-		of the c	ourse.					
10	Prof. Dr Other inf	ng to MRPO coordinator:  -Ing. Bruno I cormation: re will be annue:	Hüsgen		of the c	ourse.					

Mas	ter Thesis								M.A.	
Iden	tification ber:	Workload:	Credits:	Study	semest	er:	Frequency	of the offer	Durati	on:
2034	4	720 h	24	3rd s	em.		each sem	ester	20 we	eks
1	Course:		Planned group s	sizes	Scope	2	Actual of time / cl	assroom	Self-stu	dy
	Lecture		60 students		0	SCH	0	h	720	h
	Seminar l	lessons	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
	Contents:  The master thesis is an independent scientific work from the subject area of the programme with a description and explanation of its solution. It can also be determined these forms in proceedings to the second of these forms in proceibles.									
3	The mas	ster thesis is me with a des	cription and expl	anation	of its so	olution. I	t can also	be determin	ned by ar	n empiric
4	The mas program investigated of these	ster thesis is me with a des ation or by co forms is possi teaching:	cription and expl nceptual or desig ble.	anation ogn tasks	of its so	olution. I	t can also	be determin	ned by ar	n empiric
	The mas program investigated of these Forms of Written of	ster thesis is me with a des ation or by co forms is possi teaching:	cription and expl nceptual or designable.	anation ogn tasks	of its so	olution. I	t can also	be determin	ned by ar	n empiric
4	The mas program investigated of these Forms of Written of	ster thesis is me with a des ation or by co forms is possi teaching: composition v	cription and expl nceptual or designable.  with faculty tutorits:	anation ogn tasks	of its so	olution. I	t can also	be determin	ned by ar	n empiric
4	The mas program investigated of these  Forms of Written of Participate Formal:  Content:	ster thesis is me with a des ation or by co forms is possisteaching:  composition value ion requirement None Coordinates	cription and expl nceptual or designable.  with faculty tutorits:	anation of tasks	of its so	olution. I n evalua	t can also ation of ex	be determing isting source	ned by ar	n empiric
4	The mas program investigated of these  Forms of Written of Participate Formal:  Content:	ster thesis is me with a des ation or by co forms is possi teaching: composition vion requirement	cription and expl nceptual or designable.  with faculty tutorits:	anation of tasks	of its so	olution. I n evalua	t can also ation of ex	be determing isting source	ned by ar	n empiric
4 5	Forms of Written of Participat Formal:  Content:	ster thesis is me with a des ation or by co forms is possisteaching:  composition value of the c	cription and expl nceptual or designable.  with faculty tutorits:	anation of tasks	of its so	olution. I n evalua	t can also ation of ex	be determing isting source	ned by ar	n empiric
5 6	The mas program investigate of these  Forms of Written of Participate Formal: Content: Forms of Prerequise Application Electricate	ster thesis is me with a des ation or by co forms is possisteaching:  teaching: composition value ion requirement Non-	cription and expl nceptual or designable.  with faculty tutorits: e rdinated topic fro	anation on tasks  ing  om the st	of its so or by a udent's	special s	t can also ation of ex subject are	be determined isting source	ned by ar	n empiric
4 5 7	The mass program investigated of these Forms of Written Content: Forms of Participate Formal: Content: Forms of Prerequise Application Electricate (M.Sc.) Important	teaching: composition violates for the awar on of the modulate Engineering ce of the grade	cription and expl nceptual or designable.  with faculty tutorits: e rdinated topic from the designated of credit points:	anation of tasks ing ing g study principal E	of its so or by a udent's	special s	t can also ation of ex subject are	be determined isting source	ned by ar	n empiric
4 5 5 6 7 8 8 9	The mas program investigated of these o	teaching: composition value for the awar  non of the modulal Engineering te of the grade g to MRPO coordinator:	cription and expl nceptual or designable.  with faculty tutor ats:  e rdinated topic from the following (M.Eng.), Mech	anation of tasks ing ing g study principal E	of its so or by a udent's	special s	t can also ation of ex subject are	be determined isting source	ned by ar	n empiric
4 5 6 7 8	The mas program investigated of these o	teaching: teaching: composition violate for the awar on of the modulal Engineering te of the grade g to MRPO coordinator:Ing. Jens Ha ormation:	cription and expl nceptual or designable.  with faculty tutor ats:  e rdinated topic from the following (M.Eng.), Mech	anation of tasks ing ing om the st	udent's	special s	t can also ation of ex subject are	be determined isting source	ned by ar	n empiric

Mul	ti-Body Si	mulation							MKS	
Ident numl	tification ber:	Workload:	Credits:	Stud	y semest	er:	Frequenc	y of the offer	Durati	on:
2011		180 h	6	1st o	or 2nd s	em.	Annual (Summe	r)	1 sem	
1	Course:	l	Planned group s	sizes	Scop	e	Actual time / c teachin	lassroom	Self-stu	dy
	Lecture		60 students		2	SCH	30	h	60	h
	Seminar l	lessons	30 students		0	SCH	0	h	0	h
	Exercise Practical or seminar Supervised self-study		20 students		1	SCH	15	h	30	h
			15 students		1	SCH	15	h	30	h
			60 students		0	SCH	0	h	0	h
3	mechanical and mechatronic systems, analyse the kinematics and dynamics of m MBS program system, interpret simulation results and compare them with the results programmes.  Contents:  - Mechanisms (definition, examples)  - Concepts in plane kinematics  - Coordinate systems, generalised coordinates  - Coercive conditions  - Examples for the standardised description of mechanisms  - Numerical solution of the kinematics  - Equations of motion of dynamics under constraints  - Lagrange multipliers									
4	<ul><li>Spatia</li><li>Euler</li><li>Example</li><li>Forms of</li></ul>	teaching:	ndardised descri		-	•				
5	Participat Formal: Content:	None None	,				•			
6		assessment: examination, o	combination exa	minatio	n, perfo	rmance	examinati	on or oral ex	kaminati	on
7	Prerequis		d of credit points:		1	<u> </u>			<u> </u>	
8	Applicati	on of the modul	e (in the following c.), Mechanical		_		nd Optimis	sation and S	imulatio	n (M.Sc
9		ce of the grade to MRPO	for the final grade:							
10	Module c	coordinator:	ımann							
11	Module coordinator: Prof. DrIng. Rolf Naumann Other information: Literature will be announced at the beginning of the course. Literature: Rill, G.: Schaeffer, T.: "Basics and methodology of multi-body									

	Simulation", Vieweg +Teubner Verlag, ISBN 978-3-8348-0888-2,2010. Haug, E.J.H: "Computer-Aided Kinematics and Dynamics of Mechanical Systems", Volume 1. Basic Methods, Allyn And Bacon, ISBN 0-205-11669-8 (v.1) 1989.	
12	Language:	1
	German	

	tiphysics S	Simulation								MPH		
Iden num	tification	Workloa	ıd:	Credits:	Study	Study semester:			y of the offer	Duration:		
204		180 h		6 1st c		or 2nd sem.		Annual (Winter)		1 sem.		
1	Course:		Pl	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60	students		2	SCH	30	h	60	h	
	Seminar	lessons	30	students		0	SCH	0	h	0	h	
	Exercise			students		2	SCH	30	h	60	h	
	Practical	or seminar	15	students		0	SCH	0	h	0	h	
	Supervise	ed self-stud	ly 60	60 students		0	SCH	0	h	0	h	
2	Learning	outcomes/	competen	ces.								
3	the coupling terms in multi-physics problems. They know the methodological procedure for the modelling and numerical simulation of coupled partial differential equations and can use free an commercial simulation software to solve multiphysics problems in a target-oriented manner.  Contents:  Definition of multiphysics via coupled partial differential equations Treatment of typical couplings (e.g. electro-thermal WW, fluid-thermal WW, fluid-structure interaction, etc.) and their applications in practice Numerical solution methods (especially FEM)											
		est practio	boundary conditions, development of solution strategies, etc.)  - Modelling and simulation using free and commercial simulation software  - Application examples									
	- M - A	oundary conformal of the conformal of th	and simu	lation using			_		software			
4	- N - A Forms of	oundary conformation of teaching:	and simu n exampl	lation using es	free and	comm	nercial si	mulation	software			
	Forms of Lecture,	oundary conformation of teaching:	and simun exampl	lation using	free and	comm	nercial si	mulation	software			
4 5	Forms of Lecture,	oundary conformation of the second of the se	and simu n exampl style teac ements:	lation using es	free and	comm	nercial si	mulation	software			
	Forms of Lecture,	oundary confodelling:  Application  teaching: seminar-stion require	and simun exampl	lation using es	free and	comm	nercial si	mulation	software			
5	Forms of Lecture, Participal Formal:	oundary confodelling:  Application  teaching: seminar-stion require	and simulation examples style teaderments: None None	lation using es	free and	comm	nercial si	mulation	software			
5	Forms of Lecture, Participal Formal: Content: Forms of Project of	oundary conformation for teaching: seminar-stion requires assessmen work	and simulation examplestyle teadements: None None t:	lation using es	free and	comm	nercial si	mulation	software			
5 6	Forms of Lecture, Participal Formal: Content: Forms of Project v	teaching: seminar-stion require assessmen work site for the a	style teacements: None None t:	lation using es	free and	comm	nercial si	mulation	software			
5 6 7	Forms of Lecture, Participal Formal: Content: Forms of Project of Module	teaching: seminar-stion require assessmen work site for the a examinati	style teacements: None None t: award of elon pass	lation using es	kercises	on the	compute	mulation	software			
5 6 7	Forms of Lecture, Participal Formal: Content: Forms of Project of Prerequis Module Applicati	teaching: seminar-stion require lassessmen work site for the sexamination of the n	and simulation example style teacher t	lation using es	cercises of	on the	compute	mulation s				
5 6 7 8	Forms of Lecture, Participal Formal: Content: Forms of Project of Prerequise Module Applicati Mechan Importan	teaching: seminar-stion require lassessmen work site for the a examinati on of the n ical Engin ce of the gr	and simulation example style teachements: None None t: award of con pass module (in pass) meering (I	lation using es	g study pr	on the	compute	mulation s				
	Forms of Lecture, Participal Formal: Content: Forms of Project version Module Application Mechanical Important according to the Module of the	teaching: seminar-stion require assessmen work site for the sexamination of the n ical Engin ce of the gray to MRP	style teadements: None None t: award of a con pass nodule (in pass pade for the PO	credit points: the following M.Sc.) and C	g study pr	on the	compute	mulation s				
5 6 7 8	Forms of Lecture, Participal Formal: Content: Forms of Project of Prerequise Module Application Mechan Important according Module of Mod	teaching: seminar-stion require assessmen work site for the a examinati on of the n ical Engin ce of the gray to MRP coordinator	style teacements: None None t: award of a compass nodule (in neering (I rade for the PO) :	credit points: the following M.Sc.) and Core final grade:	g study pr	on the	compute	mulation s				
5 6 7 8	Forms of Lecture, Participal Formal: Content: Forms of Project of Prerequis Module Applicati Mechan Importan accordin Module of Prof. Dr	teaching: seminar-stion require assessmen work site for the sexamination of the n ical Engin ce of the gray to MRP	style teacements: None None t: award of a compass nodule (in neering (I rade for the PO) :	credit points: the following M.Sc.) and Core final grade:	g study pr	on the	compute	mulation s				

12 Language:
German

Identi numbo 2008	fication er:  Course:	Workload: 180 h	Credits:		semes	ter:	Frequenc	y of the offer	Duratio	n:						
		180 h	6	1st o	Study semester:  1st or 2nd sem.		Frequency of the offer  Annual (Winter)		Duration: 1 sem.							
1		Į.														
	Lecture	Course: F		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study						
	Lecture		60 students		2	SCH	30	h	60	h						
	Seminar l	essons	30 students		1	SCH	15	h	30	h						
ŀ	Exercise		20 students		0	SCH	0	h	0	h						
	Practical	or seminar	15 students			SCH	15	h	30	h						
•	Supervise	ed self-study	60 students		0	SCH	0	h	0	h						
3	models. STAR C	on of the theor n of the Navi Commercial to CM+ or ANS	etical foundation er Stokes equation cols: Simulation of YS CFX. Softwa ng language for a	ons by of turbu ire deve	the entlent floor	ergy equows with nt: Imple	ation, ba a comme mentation	sics of turb rcial CFD p	ulence, t rogramn	turbulend ne, such a						
4	Forms of teaching: Lecture, seminar lessons and practical course															
5		ion requirement		ourse												
	Formal:	None														
ļ	Content:		ent of the lecture	CFD 1	(1187)	1										
6	Forms of assessment:															
	Written e	examination														
7		ite for the award	d of credit points:													
8	Application		e (in the following	study pı	ogramr	nes)										
9	Importance	ce of the grade t	for the final grade:													
10	Module c	g to MRPO oordinator:	in Datum													
1.1		rer. nat. Mart	ın Petry													
11		e will be anno	unced at the begi	inning o	of the c	ourse.										
12	Language German	»:					Language:									

	ect Module	1							MPR1	I	
Iden num	tification ber:	Workload:	Credits:	Study	semes	ter:	Frequenc	y of the offer	Duration	on:	
200′	7	180 h	6	1st o	r 2nd s	em.	Annual (Summe	r)	1 sem		
1	Course:	Course: Planned group sizes		sizes	Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		60 students		0	SCH	0	h	0	h	
	Seminar le	essons	30 students		4	SCH	60	h	120	h	
	Exercise		20 students		0	SCH	0	h	0	h	
	Practical of	or seminar	15 students		0	SCH	0	h	0	h	
	Supervise	d self-study	60 students		0	SCH	0	h	0	h	
2	Learning of	outcomes/com	petences:								
			to work on scient	tific prol	olems f	rom the	field of m	echanical er	ngineerir	ng withi	
3	Contents:		-J	the framework of a project.							
3	Familiarisation with current research and development topics, project management,										
	Familiari	sation with c	eurrent research a	nd deve	lopmen	it topics,	project m	anagement,	docume	ntation	
				nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
4		entation of re		nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
4	and prese	entation of reteaching:		nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
	and prese Forms of t Seminar	entation of reteaching:	sults.	nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
	and prese Forms of t Seminar	entation of re- teaching: lessons on requirement	sults.  nts:	nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
5	and prese Forms of t Seminar Participati	entation of re- teaching: lessons on requiremen	sults.  nts:	nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
5	and prese Forms of t Seminar Participati Formal:	entation of re- teaching: lessons on requirement	sults.  nts:	nd deve	lopmen	t topics,	project m	anagement,	docume	ntation	
	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w	entation of re- teaching: lessons on requiremer	sults.  nts: e e	nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
5	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w	entation of releaching: lessons on requirement Non Non assessment: vork te for the awar	sults.  nts: e e rd of credit points:	nd deve	opmen	t topics,	project m	anagement,	docume	ntation	
5	and prese Forms of t Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module 6	entation of releaching: lessons on requirement Non Non assessment: vork te for the awar examination p	sults.  hts: e e rd of credit points: pass				project m	anagement,	docume	ntation	
5 6 7	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module e Application	entation of releaching: lessons on requirement Non Non assessment: //ork te for the awar examination j on of the modu	sults.  nts: e e  rd of credit points: pass ale (in the following				project m	anagement,	docume	ntation	
5 6 7 8	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module e Application Mechanic	entation of re- teaching: lessons on requiremer Non Non assessment: /ork te for the awar examination p on of the modu cal Engineeri	sults.  nts: e e e rd of credit points: pass ale (in the following ing (M.Sc.)	g study pi			project m	anagement,	docume	ntation	
5 6 7 8	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module e Application Mechanical	entation of releaching: lessons on requirement Non Non assessment: /ork te for the awar examination pon of the modu cal Engineering of the grade	sults.  nts: e e  rd of credit points: pass ale (in the following	g study pi			project m	anagement,	docume	ntation	
5 6 7 7 88	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module e Application Mechanical	entation of releaching: lessons on requirement Non Non assessment: Fork te for the awar examination proportion of the module cal Engineering of the grade g to MRPO	sults.  nts: e e e rd of credit points: pass ale (in the following ing (M.Sc.)	g study pi			project m	anagement,	docume	ntation	
5 6 7 7 88	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module of Application Importance according	entation of releaching: lessons on requirement Non Non assessment: vork te for the awar examination p on of the modu cal Engineeri e of the grade g to MRPO coordinator:	sults.  nts: e e  rd of credit points: pass ale (in the following ing (M.Sc.) for the final grade:	g study pi			project m	anagement,	docume	ntation	
55 6 7 8 8	and prese Forms of the Seminar Participation Formal: Content: Forms of the Project was prerequising Module to Application Importance according Module con Prof. Dr.	entation of releaching: lessons on requirement Non Non assessment: vork te for the awar examination per of the modu cal Engineering of the grade g to MRPO coordinator: rer. nat. Mar	sults.  nts: e e  rd of credit points: pass ale (in the following ing (M.Sc.) for the final grade:	g study pi			project m	anagement,	docume	ntation	
5 6 7 8 8	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module a Application Mechanic Importance according Module co Prof. Dr. Other info	entation of releaching: lessons on requirement Non Non assessment: Fork te for the awar examination pon of the modu cal Engineering of the grade g to MRPO coordinator: rer. nat. Mar ormation:	rtin Petry	g study pr	rogramı	mes)	project m	anagement,	docume	ntation	
5	and prese Forms of a Seminar Participati Formal: Content: Forms of a Project w Prerequisi Module a Application Mechanic Importance according Module co Prof. Dr. Other info	entation of releaching: lessons lesson	sults.  nts: e e  rd of credit points: pass ale (in the following ing (M.Sc.) for the final grade:	g study pr	rogramı	mes)	project m	anagement,	docume	ntation	

Proj	ect Module	2								MPR2		
Ident	tification	Worklo	ad:	Credits:	Study	semest	er:	Frequency	of the offer	Duratio	n:	
numl 2002		180 h		6	1st or	r 2nd se	em.	Annual (Winter)		1 sem.		
1	Course:		I	Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study		
	Lecture		6	60 students		0 SCH		0	h	0	h	
	Seminar le	essons	3	30 students		4	SCH	60	h	120	h	
	Exercise		2	20 students		0	SCH	0	h	0	h	
	Practical of	or semina	r 1	15 students		0	SCH	0	h	0	h	
	Supervise	d self-stu	dy 6	60 students		0	SCH	0	h	0	h	
2	Learning	outcomes	/compete	ences:			Į.					
	The stude	Learning outcomes/competences:  The students are able to work on scientific problems from the field of mechanical engineering within										
	The students are able to work on scientific problems from the field of mechanical engineering within the framework of a project.											
	the frame				tific prob	olems fi	om the	field of me	chanical er	ngineering	g withir	
3	the frame Contents:				tific prob	olems fi	rom the	field of me	chanical er	ngineering	g withir	
3	Contents:	ework of	a projec		•							
3	Contents: Familiari and prese	ework of sation wentation of	a projection	et. ent research a	•							
3	Contents: Familiari and prese Forms of	ework of sation we entation of teaching:	a projection	et. ent research a	•							
	Contents: Familiari and prese Forms of Seminar	ework of sation wentation of teaching:	a project with currence of result	et. ent research a	•							
	Contents: Familiari and prese Forms of Seminar Participati	sation wentation of teaching: lessons	rith curre of result	et. ent research a	•							
4	Contents: Familiari and prese Forms of Seminar Participati Formal:	ework of sation wentation of teaching: lessons	rith curre of result rements:	et. ent research a	•							
4	Contents: Familiari and prese Forms of Seminar Participati Formal: Content:	ework of sation wentation of teaching: lessons	rith curre of result rements: None None	et. ent research a	•							
4	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of	ework of sation wentation of teaching: lessons ion requir	rith curre of result rements: None None	et. ent research a	•							
5	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w	ework of sation wentation of teaching: lessons ion requir assessmen	rith curre of result rements: None None nt:	ent research as.	•							
4 5	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi	ework of sation wentation of teaching: lessons ion requir assessment	rith curre of result rements: None None nt:	ent research as.  f credit points:	•							
4 5 6 7	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e	ework of sation wentation of teaching: lessons ion requir assessment york te for the examinat	rith curre of result rements: None None nt: award of	ent research as.  f credit points:	nd devel	opmen	t topics,					
5	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Application	ework of sation wentation of teaching: lessons ion requires assessment of the form of the remainant on of the remainant on of the remainant of	rith curre of result rements: None None nt: award of	ent research as.  f credit points: s in the following	nd devel	opmen	t topics,					
4 5 6 7 8	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Seminar Participati Formal: Content: Forms of Seminar Project w Prerequisi Module & Application Mechanic	ework of sation wentation of teaching: lessons ion requir assessment york te for the examinat on of the r cal Engin	rith curre of result rements: None None nt: award of tion pass module (ineering	ent research as.  f credit points: sin the following (M.Sc.)	nd devel	opmen	t topics,					
4 5 6 7	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Seminar Participati Formal: Content: Forms of Seminar Project w Prerequisi Module of Application Mechanic	ework of sation wentation of teaching: lessons ion requires assessment or key or key of the for the examination of the recal Engine of the general second in the general second	rith curre of result rements: None None nt: award of tion pass module (ineering grade for	ent research as.  f credit points: s in the following	nd devel	opmen	t topics,					
4 5 6 7 8 9	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Application Importance according	ework of estation we entation of teaching: lessons ion requires assessment or key or key of the forther examinate on of the recal Engineer of the geg to MRI	rith curre of result rements: None None nt: award of tion pass module (in neering	ent research as.  f credit points: sin the following (M.Sc.)	nd devel	opmen	t topics,					
4 5 6 7 8	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Applicatio Mechanic Importance according	ework of estation we entation of teaching: lessons ion requires assessment or known to find the form of the recal Engine te of the get of the g	rith curre of result rements: None None nt: award of tion pass module (ineering grade for PO	ent research as.  f credit points: s in the following (M.Sc.) the final grade	nd devel	opmen	t topics,					
4 5 7 8 9	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Applicatio Mechani Importance according Module ce Prof. Dr.	ework of sation we entation of teaching: lessons ion requir assessment york te for the examinate on of the re cal Engir te of the g g to MRI toordinator rer. nat.	rith curre of result rements: None None nt: award of tion pass module (ineering grade for PO r: Martin	ent research as.  f credit points: s in the following (M.Sc.) the final grade	nd devel	opmen	t topics,					
4 5 6 7 8 9	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Applicatio Mechanic Importance according Module co Prof. Dr. Other info	ework of sation wentation of teaching: lessons ion requir assessment york te for the examination of the recal Engine te of the g g to MRI poordinator rer. nat.	rith curre of result  ements: None None nt: award of tion pass module (ineering grade for PO r: Martin	f credit points: sin the following (M.Sc.) the final grade	nd devel	opment	t topics,					
4 5 7 8 9	Contents: Familiari and prese Forms of Seminar Participati Formal: Content: Forms of Project w Prerequisi Module e Applicatio Mechanic Importance according Module co Prof. Dr. Other info	ework of sation wentation of teaching: lessons ion requir assessment ork ite for the examinate on of the re cal Engine te of the g g to MRI coordinator rer. nat. ormation: e will be	rith curre of result  ements: None None nt: award of tion pass module (ineering grade for PO r: Martin	ent research as.  f credit points: s in the following (M.Sc.) the final grade	nd devel	opment	t topics,					

Syst	ems Simul	lation							SYS	
Ident numl	tification ber:	Workload:	ad: Credits: S		y semes	ter:	Frequency	of the offer	Duration:	
2009	)	180 h	6	1st c	or 2nd s	em.	Annual (Summer	)	1 sem.	
1	Course:		Planned group s	Planned group sizes		e	Actual contact time / classroom teaching		Self-study	
	Lecture		60 students		2	SCH	30	h	60	h
	Seminar	lessons	30 students		2	SCH	30	h	60	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
			a targeted manno nerical simulation							nes, min
3	Contents	:								
3	- III - M te - M tr - S - S	ntroduction (de Modelling meth echniques, exp Model preparati reatment of alg imulation proc	efinitions, types of nods (balance-spa- erimental model ion for simulation gebraic loops and cedures (classific eriments (planning)	ace base ling) n (transt l structur cation, se	ed, form fer to st ral sing election	nalisms for tate repre- ularities, a criteria,	esentation, descripto, num. prol	lectr. syst., block diag form) blems)		
4	- In - M te - M tr - S - S - A	ntroduction (de Modelling meth echniques, exp Model preparative reatment of algorimulation proc imulation expenses application exact teaching:	nods (balance-spa erimental model ion for simulatio gebraic loops and redures (classific eriments (plannin amples	ace base ling) n (transt l structur cation, se	ed, form fer to st ral sing election	nalisms for tate repre- ularities, a criteria,	esentation, descripto, num. prol	lectr. syst., block diag form) blems)		-
4	- II - M te - M tr - S - S - A	ntroduction (de Modelling methode chniques, exposed for the continues) and the continues of	ands (balance-spacerimental model ion for simulation gebraic loops and bedures (classific eriments (planning) imples	ace base ling) n (transt l structur cation, se	ed, form fer to st ral sing election	nalisms for tate repre- ularities, a criteria,	esentation, descripto, num. prol	lectr. syst., block diag form) blems)		
4	- II - M te - M tr - S - S - A	ntroduction (de Modelling meth echniques, exp Model preparative reatment of algorimulation proc imulation expenses application exact teaching:	nods (balance-spa erimental model ion for simulatio gebraic loops and cedures (classific eriments (plannin amples	ace base ling) n (transt l structur cation, se	ed, form fer to st ral sing election	nalisms for tate repre- ularities, a criteria,	esentation, descripto, num. prol	lectr. syst., block diag form) blems)		
4	- In - M te - M tr - S - S - A Forms of Lectures Participa Formal: Content:	ntroduction (de Modelling methode in the consideration of algorithms) in the consideration process and computer to requirement of algorithms. It is and computer to requirement of None in the consideration in the conside	ands (balance-spacerimental model ion for simulation gebraic loops and redures (classific eriments (planning) amples	ace base ling) n (transt l structur cation, se	ed, form fer to st ral sing election	nalisms for tate repre- ularities, a criteria,	esentation, descripto, num. prol	lectr. syst., block diag form) blems)		
4	- In - M tte - M ttr - S - S - A  Forms of Lectures Participa Formal: Content: Forms of Term pa	ntroduction (de Modelling methode de Modelling methode de Model preparative atment of algumulation procimulation expensive atment of algumulation expensive atment of algumulation expensive and computer tion requirement None None Sassessment:	ands (balance-spacerimental model ion for simulation gebraic loops and bedures (classific eriments (planning)) ar seminars ts:	ace base ling) n (transi l structure eation, se ng, imple	d, form	ate repreularities, criteria, tion and	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems)	ram, linea	arisation,
14 55	- In - M te - M tr - S - S - A  Forms of Lectures Participa Formal: Content: Forms of Term pa oral exa Prerequise	ntroduction (de Modelling methode de Modelling methode de Model preparative atment of algumulation procimulation expensive and computer to requirement None None assessment:  aper, written expensive atmention or expensive atmention of the model atmention or expensive atmention at the	ands (balance-spacerimental model ion for simulation for simulation gebraic loops and redures (classificeriments (planning)) amples  r seminars tts:  e  camination, combination during of credit points:	ace base ling) n (transi l structure eation, se ng, imple	d, form	ate repreularities, criteria, tion and	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems)	ram, linea	arisation
	- In - M te - M tr - S - S - A Forms of Lectures Participa Formal: Content: Forms of Term pa oral exa Prerequis Module Applicati	Antroduction (de Modelling methode de Modelling methode de Model preparative atment of algumulation procimulation expension examination expension requirement None Supplication examination or existe for the aware examination prion of the module.	ands (balance-spacerimental model ion for simulation for simulation gebraic loops and redures (classificeriments (planning)) amples  r seminars tts:  e  camination, combination during of credit points:	ace base ling) n (transi l structure eation, se ng, imple	examinurse	nation, p	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems) )	ion, proje	arisation,
4 5 7	- In - M tte - M ttr - S - S - A  Forms of Lectures Participa Formal: Content: Forms of Term pa oral exa Prerequis Module Applicati BioMec	Antroduction (de Modelling methode de Modelling methode de Model preparative atment of algorimulation procimulation expensive and computer to method in the Model None assessment:  Application examination or expensive for the aware examination or expensive for the aware examination procimulation of the modulation of the grade and to MRPO	ands (balance-spacerimental model ion for simulation for simulation gebraic loops and cedures (classific teriments (planning teriments) ar seminars  ts:  ce camination, combination during dof credit points:  bass le (in the following	bination g the cou	examinurse	nation, p	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems) )	ion, proje	arisation,
4 5 7 7 8	- In - M te - M tr - S - S - A Forms of Lectures Participa Formal: Content: Forms of Term pa oral exa Prerequis Module Applicati BioMec	Antroduction (de Modelling methode de Modelling methode de Model preparative atment of algorimulation procession de Model preparative atment of algorimulation expense application examination expense and computer to method in the modulation of the modulation of the modulation of the grade and to MRPO coordinator:	ands (balance-spacerimental model from for simulation for simulation gebraic loops and redures (classific eriments (planning imples)  The seminars tests:  The semination during dof credit points:  The pass test in the following second for the final grade:	bination g the cou	examinurse	nation, p	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems) )	ion, proje	arisation,
4 5 6	- In - M te - M tr - S - S - A Forms of Lectures Participa Formal: Content: Forms of Term pa oral exa Prerequis Module Applicati BioMec Importan accordir Module of Prof. Dr	Antroduction (de Modelling methode de Modelling methode de Model preparative atment of algorimulation procimulation expensive and computer to method in the Model None assessment:  Application examination or expensive for the aware examination or expensive for the aware examination procimulation of the modulation of the grade and to MRPO	ands (balance-spacerimental model from for simulation for simulation gebraic loops and redures (classific eriments (planning imples)  The seminars tests:  The semination during dof credit points:  The pass test in the following second for the final grade:	bination g the cou	examinurse	nation, p	esentation, , descripto , num. prol follow-up	lectr. syst., block diag r form) blems) )	ion, proje	arisation,

12 Language:
German

	ology								TRI			
Ident	tification ber:	Workload:	Credits: Study		dy semester:		Frequency of the offer		Duration:			
2004	1	180 h	6	1st o	1st or 2nd sem.		Annual (Winter)		1 sem.			
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study			
	Lecture		60 students		2	SCH	30	h	60	h		
	Seminar l	essons	30 students		1	SCH	15	h	30	h		
	Exercise		20 students		0	SCH	0	h	0	h		
	Practical of	or seminar	15 students		1	SCH	15	h	30	h		
	Supervise	d self-study	60 students		0	SCH	0	h	0	h		
	influencing factors, it is possible for the students to develop suitable measures for system optimisatio with regard to friction and wear. They will be able to independently work out case studies an scientifically interpret and explain them in the context of tribology.											
3	influence Wear and Lubricati	Types and mees.  d tear: Types a	echanisms of fric and manifestation tion, characterist	s of we	ar. Dar es, lubri	nage me	chanisms nethods.	Wear mini				
		ment of friction cal systems.	on, wear and lubr	icant pa	ramete	rs. Selec	ted exam	5103 01				
4	tribologic Forms of	cal systems.			ramete	rs. Selec	ted exam	, , , , , , , , , , , , , , , , , , ,				
	Forms of Lecture,	cal systems. teaching: seminar lesso	ns and practical c		ramete	rs. Selec	ted exam	5.03 01				
4 5	Forms of Lecture, Participat	cal systems.  teaching: seminar lesso ion requirement	ns and practical c		ramete	rs. Selec	ted exam	5.03 01				
	Forms of Lecture, Participat Formal:	teaching: seminar lesso ion requirement None	ns and practical c		ramete.	rs. Selec	ted exam	5.03 01				
5	Forms of Lecture, Participat Formal: Content:	teaching: seminar lesso ion requirement None None	ns and practical c		ramete	rs. Selec	ted exam	5.63 01				
	Forms of Lecture, Participat Formal: Content: Forms of	teaching: seminar lesso ion requirement None None assessment:	ns and practical c	course					oral exam	1		
5	Forms of Lecture, Participat Formal: Content: Forms of Term pap	teaching: seminar lesso ion requirement None None assessment: per, written ex	ns and practical costs: costs: costs: distribution and practical costs: di	course	examir				oral exam	1		
5 6 7	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of	teaching: seminar lesso ion requirement None None assessment: per, written ex ite for the award examination p	ns and practical costs: amination, comb	course	examir	nation, p			oral exam	1		
5	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application	teaching: seminar lesso ion requirement None assessment: per, written ex examination p on of the modul	ns and practical cas:  cas:  camination, comb  d of credit points: ass and course as e (in the following	course	examir	nation, p			oral exam	1		
5 6 7	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application Mechani	teaching: seminar lesso ion requirement None assessment: per, written ex examination p on of the modul cal Engineerin	amination, comb d of credit points: ass and course ass (in the following mg (M.Sc.)	course	examir	nation, p			oral exam	1		
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application Mechani Importance	teaching: seminar lesso ion requirement None None assessment: per, written ex ite for the award examination p on of the modul cal Engineering ce of the grade for	ns and practical cas:  cas:  camination, comb  d of credit points: ass and course as e (in the following	course	examir	nation, p			oral exam	1		
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisis Module of Application Mechani Important accordin	teaching: seminar lesso ion requirement None assessment: per, written ex examination p on of the modul cal Engineerin	amination, comb d of credit points: ass and course ass (in the following mg (M.Sc.)	course	examir	nation, p			oral exam	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application Importance according Module of	teaching: seminar lesso ion requirement None None assessment: per, written ex examination p on of the modul cal Engineering of the grade to g to MRPO	ns and practical costs:  camination, comb  d of credit points: ass and course as e (in the following ng (M.Sc.)  for the final grade:	course	examir	nation, p			oral exam			
5 6 7 8	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application Mechani Important according Module of Prof. Dr. Other info	teaching: seminar lesso ion requirement None None assessment: per, written ex ite for the award examination p on of the modul cal Engineering to of the grade of g to MRPO oordinator: -Ing. Klaus D ormation:	ns and practical costs:  camination, comb  d of credit points: ass and course as e (in the following ng (M.Sc.)  for the final grade:	course pination ssessme study pr	examir nt rogramn	nation, p			oral exam			
5 6 7 8 9	Forms of Lecture, Participat Formal: Content: Forms of Term pap Prerequisi Module of Application Mechani Important according Module of Prof. Dr. Other info	teaching: seminar lesso ion requirement None None assessment: per, written ex examination p on of the modul cal Engineering to MRPO oordinator: -Ing. Klaus D ormation: e will be anno	amination, comb d of credit points: ass and course as e (in the following ng (M.Sc.) for the final grade:	course pination ssessme study pr	examir nt rogramn	nation, p			oral exam			

Elec	tive Modul	le							WM			
Iden num	tification ber:	Workload:	Credits:	Study	semesto	er:	Frequency of	of the offer	Duration	n:		
902	8	180 h	6	1st s	em.		Annual (Summer)		1 sem.			
1	Course:		Planned group sizes		Scope		Actual contact time / classroom teaching		Self-study			
	Lecture		60 students			SCH		h	h			
	Seminar l	essons	30 students			SCH		h		h		
	Exercise		20 students			SCH		h		h		
	Practical	or seminar	15 students		0	SCH	0	h	0	h		
	Supervise	ed self-study	60 students			SCH		h		h		
2	Learning	outcomes/comp	petences:		•		,	,		•		
3	Contents:											
4	Forms of	teaching:										
5	Participat	ion requiremen	ts:									
	Formal:											
	Content:											
6	Forms of assessment:											
7	Prerequisite for the award of credit points:											
8	Application	Application of the module (in the following study programmes)										
-		cal Engineeri		<b>J</b> 1	U							
9	Importance	ce of the grade	for the final grade:									
10		oordinator:										
		rer. nat. Mar	tın Petry									
11	Other info	ormation:										
12	Language	):										
	German											