Non-official reading version

The Study Regulations for the Master's Degree Course Simulation and System Design have not been published coherently in this form. This publication is intended as a service for the students and other members of the Stralsund University of Applied Sciences to summarize the study regulations and their amendment statutes.

The text of the study regulations and the respective amendment statutes published on the homepage of the Stralsund University of Applied Sciences is legally binding.

Studienordnung (Study Regulations) for the Master's Degree Course Simulation and System Design at Hochschule Stralsund, University of Applied Sciences

of 18th May 2017

in the version of the fourth amending statute of the Study Regulations for the Master's Degree Course Simulation and System Design of 25th April 2024

Amendments:

- Appendix 2 (module handbook) completely rewritten, amended by 1st amending statutes of 06th August 2019
- § 8 paragraph 1 and 2 tables course schedule partially rewritten, § 8 Paragraph 3 two required compulsory modules, appendix 2 (module handbook) amended: new compulsory module "Scientific Work", elective module "Advanced Technical Mechanics" deleted and replaced by "Stability of Floating Systems", amended by 2nd amending statutes of 13th October 2020
- § 8 paragraph 1 and 2 tables errors of the 2nd amending statutes fixed, module table „Scientific Work" amended, amended by 3rd amending statutes of 24th March 2021
- § 8 paragraph 1 and 2 and in the appendix 2 (module handbook) ECTS points in the module "Master's thesis and Master's colloquium" amended, two compulsory elective modules 'Automotive Lighting Engineering' and 'Stability of Floating Systems' deleted, amended by the 4th Amendment Statutes of 25th April 2024

Based on § 2(1) in conjunction with § 39(1) of the *Landeshochschulgesetz* (State Higher Education Law) of Mecklenburg-Vorpommern, in the version announced on 25th January 2011 (Law and Ordinance Gazette of Mecklenburg-Vorpommern (GVOBl. M-V) p. 18), last amended by Article 3 of the law of 11th July 2016 (GVOBl. M-V p. 550, 557), Hochschule Stralsund, University of Applied Sciences (hereinafter UAS Stralsund) hereby passes the following *Studienordnung* (hereinafter Study Regulations) for the master's degree course in Simulation and System Design as statute:

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I. General Information

§ 1
Scope of Application

These Study Regulations apply to the master's degree course Simulation and System Design at UAS Stralsund's Faculty of Engineering, which offers two kinds of degree:

- Master's degree with a standard length of study of three subject semesters
- Master's degree with a standard length of study of four subject semesters with an integrated internship semester.

By using the *Fachprüfungsordnung* (hereinafter Subject-Specific Examination Regulations) for the master's degree course Simulation and System Design as a basis, it defines the goals and contents, as well as the structure of the degree course.

§ 2
Study Goal

(1) The study goal of the master's degree course Simulation and System Design is to qualify with the postgraduate degree 'Master of Engineering', abbreviated to 'M.Eng'.

(2) Teaching and studying should prepare students for their future professional careers, taking the changes to the professional world and social environment into consideration. The master's degree should build on an undergraduate degree, by furthering the students' subject knowledge to enable them to use scientific methods and results for their job, even in difficult and complex problems, and to carry out research independently and mainly application-based.

(3) Students studying the master's degree course Simulation and System Design should be in a position to successfully work on tasks from the fields of simulation and system design. By extending knowledge in selected fields of mathematics and fundamental engineering sciences and areas of knowledge that will be relevant for later application, scientific-analytical skills will be gained that stretch beyond the competencies learned in bachelor's degree courses. By taking part in current research projects, students will learn to independently apply scientific knowledge and methods to complex problems.

(4) Students will consolidate their ability to explore new fields and gain further knowledge independently. Accordingly, training is also directed towards the fostering of personalities and teaching of social competence and basic economical skills.

§ 3
Duration of Studies and Admissions

(1) This degree course offers two different options for the time in which studies can usually be completed (standard length of study) by gaining a postgraduate degree. The degree course offers two different degree paths with differing standard lengths of study:

- The standard length of study for the three-semester master's degree is three subject semesters.
- The standard length of study for the four-semester master's degree is four subject semesters with an integrated internship semester.

The master's degree is completed by passing the master's examination.

(2) Admission to the course is regulated pursuant to § 2 of the Subject-Specific Examination Regulations.

§ 4
Types of Instruction

(1) Instruction is given in the form of lectures, tutorials, laboratory practicals, seminars and projects.

(2) Lectures convey knowledge and relationships, as well as the skills and methods of the respective subject area in a systematic manner to large groups of participants, they are mainly taught in the form of presentations. If there is only a small group of participants, the lecture can also be arranged as a seminar.

(3) Tutorials are supplementary components of lectures. They consolidate and apply the knowledge that has been taught, if possible in smaller groups, through the use of representative examples and practical exercises. Tutorials can be combined with lectures to create integrated forms of instruction.

(4) Laboratory practicals apply and consolidate practical skills and should support the way academic tasks are dealt with independently. They accompany lectures or can be provided separately as a block course. The results are recorded by the students in the form of a report or practical report, group work is also possible.

(5) Seminars are forms of instruction for smaller groups of participants, in which certain problems of the respective subject area are looked at in depth. Seminars can be distinguished from lectures due to their higher demand of independent academic work and interactive teaching and learning formats. Students should be introduced to independent academic work through written assignments or presentations and exchange with teaching staff and fellow students. Seminars can be combined with lectures to create integrated forms of instruction.

(6) Projects are academic tasks that investigate wider problems that are made up of several research tasks. They should be oriented towards the conditions and requirements of the future professional practice and foster competence for interactive group processes common in academic work. The projects should integrate subject-specific research tasks with various methodical approaches and aim to achieve interdisciplinary collaboration. Projects should be supervised by professors. The results of a project are usually presented by the students by way of a written assignment and a presentation.

§ 5
Course Structure

(1) The contents, structure and realisation of the teaching courses result from the list of modules and the module handbook pursuant to § 8.

(2) The Faculty provides students with a course schedule as a recommendation for the correct structure of the degree course, based on these Study Regulations, and subject to the *Rahmenprüfungsordnung* (hereinafter Framework Examination Regulations) and the Subject-Specific Examination Regulations for the master's degree course Simulation and System Design. The course schedule outlines the recommended course of study and describes the kind, scope and order of modules, as well as the coursework and examinations (§ 8).

(3) The students are recommended to use the respective course schedule as a guideline when planning their weekly timetable.

§ 6
Study Advice

(1) General study advice is provided by UAS Stralsund's Division for Studies, Examinations and International Affairs.

(2) Course-specific study advice is provided at the Faculty of Engineering by the contact person appointed to the degree course.

II. Modules

§ 7
Module Status

(1) All modules that are listed in the list of modules under § 8 are either compulsory, compulsory elective or elective modules.

(2) Compulsory modules are modules that are binding for all students of a degree course.

(3) Compulsory elective modules are the modules of a degree course that are offered as an alternative. Students must select courses that amount to the required scope from the catalogue of compulsory elective/elective modules for the master's degree course Simulation and System Design or other offers at UAS Stralsund.

(4) Elective modules (subsidiary modules) are modules that students can freely choose to attend in addition to the compulsory and compulsory elective modules, which can be selected from the catalogue of compulsory elective/elective modules for the master's degree Simulation and System Design or other offers at UAS Stralsund, and which are not compulsory prerequisites for attaining the study goal. These optional courses can be attended by the students for complementing, perfecting, consolidating or specialising their knowledge. More detailed regulations for the subsidiary subjects are defined in § 28 of the Framework Examination Regulations.

§ 8
List of Modules and Module Handbook

(1) The course schedule for the 3-semester master's degree course Simulation and System Design is made up of the following compulsory and compulsory elective modules:

Module, Lehrveranstaltungen (SWS: Vorlesung / Übung / Seminaristischer Unterricht / Labor oder Seminar) Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)							
Modulnummer und Name (module code and name)	**Lehrveranstaltung (course)**	**1. Sem.* (1st Sem.)**	**2. Sem.* (2nd Sem.)**	**3. Sem. (3rd Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Credits (credits)**
Compulsory Modules for Consolidating Basic Mathematical, Scientific and Engineering Knowledge						**8**	**12**
SSDM 1000 Selected Chapters of Mathematics	Selected Chapters of Mathematics	0/1/3/0			WE 120	4	6
SSDM 1200 Applied Computer Science	Applied Computer Science	0/0/2/2			K 120	4	6
Compulsory Modules for Consolidating Engineering Application						**12**	**18**
SSDM 2300 Applied Computational Fluid Dynamics	Applied Computational Fluid Dynamics		0/1/2/1		WE 120	4	6
SSDM 2400 Simulation in Mechanics & Processes	Simulation in Mechanics & Processes	0/1/3/0			WE 120	4	6
SSDM 5400 Vehicle Management Systems (incl. Simulation)	Vehicle Management Systems (incl. Simulation)		0/1/2/1		WE 120	4	6
Compulsory Modules with Interdisciplinary Content						**12**	**18**
SSDM 3200 International Economics & Trade	International Economics & Trade		0/0/4/0		CS 116	4	6
SSDM 3500 International Accounting	International Accounting	2/2/0/0			WE120	4	6
SSDM 6000 Scientific Work	Scientific Work		2/0/0/2		B 90	4	6
Compulsory Elective/Elective Modules for Consolidating Knowledge, Specialisation						**8**	**12**
WMSSDM XXXX Compulsory Elective module		see below			see below	4	6
WMSSDM XXXX Compulsory Elective module			see below		see below	4	6
Compulsory Modules Degree Completion						**0**	**30**
SSDM 9000 Master's Dissertation and Colloquium	Master's Dissertation			X	see FPO		24
	Master's Dissertation Colloquium			X	see FPO		6
Total SWS (Contact Hours per Week)		**20**	**20**			**40**	
ECTS Credits		**30**	**30**	**30**			**90**

Module, Lehrveranstaltungen (SWS: Vorlesung / Übung / Seminaristischer Unterricht / Labor oder Seminar) **Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)**						
Wahlpflicht / Wahlmodule (elective modules)		**1. Sem.* (1st Sem.)**	**2. Sem.* (2nd Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Punkte (points)**
Modulnummer und Name (module code and name)	**Lehrveranstaltung (course)**				**8**	**12**
WMSSDM 2000 Lightweight Materials and Materials Selection	Lightweight Materials and Materials Selection		0/0/3/1	WE 120	4	6
WMSSDM 2100 Renewable Energy Technology	Renewable Energy Technology	0/0/4/0		Pr 30	4	6
WMSSDM 2200 Project work	Project work	0/0/0/4		Pr 30	4	6
WMSSDM 2700 Thermodynamics of Multicomponent Systems	Thermodynamics of Multicomponent Systems	0/0/4/0		WE 120	4	6
WMSSDM 3000 Human Resources Management	Human Resources Management	0/0/4/0		CS 116	4	6
WMSSDM 3600 Quality in Automotive Industry	Quality in Automotive Industry	0/0/3/1		WE 120	4	6
WMSSDM 5100 Production	Production		0/0/4/0	WE 120	4	6
WMSSDM 5500 Vehicle Simulation & Test Drive	Vehicle Simulation & Test Drive		0/0/2/2	WA 30	4	6
WMSSDM 5600 Simulation in Logistics and Production	Simulation in Logistics and Production		0/0/0/4	Pr 45	4	6

Legend:

WE 120	Written examination, 120 minutes
WA 30	Written assignment, 30 hours
Pr 45	Presentation, 45 minutes
CS 116	Case study 116 hours
FPO	*Fachprüfungsordnung* (Subject-Specific Examination Regulations)

* 1st Semester = summer semester SoSe
* 2nd Semester = winter semester WiSe

The examinations and regular examination dates are stipulated in § 7(2) of the Subject-Specific Examination Regulations.

(2) The course schedule for the 4-semester master's degree course Simulation and System Design is made up of the following compulsory and compulsory elective modules:

a) If the internship semester is planned for the first subject semester:

Module, Lehrveranstaltungen (SWS: Vorlesung / Übung / Seminaristischer Unterricht / Labor oder Seminar) **Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)**								
Modulnummer und Name (module code and name)	**Lehrveranstaltung (course)**	**1. Sem. (1st Sem.)**	**2. Sem. (2nd Sem.)**	**3. Sem. (3rd Sem.)**	**4th Sem. (4th Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Credits (credits)**
Compulsory Modules Internship							**2**	**30**
SSDM 8000 Internship Semester	Internship Semester (Internship semester)	X				see Internship Guidelines	2	30
Compulsory Modules for Consolidating Basic Mathematical, Scientific and Engineering Knowledge							**8**	**12**
SSDM 1000 Selected Chapters of Mathematics	Selected Chapters of Mathematics			0/1/3/0		WE 120	4	6
SSDM 1200 Applied Computer Science	Applied Computer Science			0/0/2/2		WE 120	4	6
Compulsory Modules for Consolidating Engineering Application							**12**	**18**
SSDM 2300 Applied Computational Fluid Dynamics	Applied Computational Fluid Dynamics		0/1/2/1			WE 120	4	6
SSDM 2400 Simulation in Mechanics & Processes	Simulation in Mechanics & Processes			0/1/3/0		WE 120	4	6
SSDM 5400 Vehicle Management Systems (incl. Simulation)	Vehicle Management Systems (incl. Simulation)		0/1/2/1			WE 120	4	6
Compulsory Modules with Interdisciplinary Content							**12**	**18**
SSDM 3200 International Economics & Trade	International Economics & Trade		0/0/4/0			CS 116	4	6
SSDM 3500 International Accounting	International Accounting			2/2/0/0		WE120	4	6
SSDM 6000 Scientific Work	Scientific Work		2/0/0/2			B 90	4	6
Compulsory Elective/Elective Modules for Consolidating Knowledge, Specialisation							**8**	**12**
WMSSDM XXXX Compulsory Elective module			see below					
WMSSDM XXXX Compulsory Elective module				see below				
Compulsory Modules Degree Completion							**0**	**30**
SSDM 9000 Master's Dissertation and Colloquium	Master's Dissertation				X	see FPO		24
	Master's Dissertation Colloquium				X	see FPO		6
Total SWS (Contact Hours per Week)		**2**	**20**	**20**			**42**	
ECTS Credits		**30**	**30**	**30**	**30**			**120**

(Note: 2nd and 3rd semesters swapped because the internship has to be in the summer semester now.)

Module, Lehrveranstaltungen (SWS: Vorlesung / Übung / Seminaristischer Unterricht / Labor oder Seminar) Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)						
Wahlpflicht / Wahlmodule (elective modules)		**2. Sem (2nd Sem.)**	**3. Sem. (3rd Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Punkte (points)**
Modulnummer und Name (module code and name)	**Lehrveranstaltung (course)**				**8**	**12**
WMSSDM 2000 Lightweight Materials and Materials Selection	Lightweight Materials and Materials Selection	0/0/3/1		WE 120	4	6
WMSSDM 2100 Renewable Energy Technology	Renewable Energy Technology		0/0/4/0	Pr 30	4	6
WMSSDM 2200 Project work	Project work		0/0/0/4	Pr 30	4	6
WMSSDM 2700 Thermodynamics of Multicomponent Systems	Thermodynamics of Multicomponent Systems		0/0/4/0	WE 120	4	6
WMSSDM 3000 Human Resources Management	Human Resources Management		0/0/4/0	CS 116	4	6
WMSSDM 3600 Quality in Automotive Industry	Quality in Automotive Industry		0/0/3/1	WE 120	4	6
WMSSDM 5100 Production	Production	0/0/4/0		WE 120	4	6
WMSSDM 5500 Vehicle Simulation & Test Drive	Vehicle Simulation & Test Drive	0/0/2/2		WA 30	4	6
WMSSDM 5600 Simulation in Logistics and Production	Simulation in Logistics and Production	0/0/0/4		Pr 45	4	6

(Note: The modules from the first semester taught in the third semester if you enroll in the summer semester.)

The examinations and regular examination dates are stipulated in § 7(3) of the Subject-Specific Examination Regulations.

b) If the internship semester is taking place in the third subject semester:

Modules, Courses (contact hours per week: Lecture / Tutorial / Seminar-Style Lecture/ Laboratory or Seminar) **Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)**								
Module Code and Name (module code and name)	**Course (course)**	**1. Sem. (1st Sem.)**	**2. Sem. (2nd Sem.)**	**3. Sem. (3rd Sem.)**	**4th Sem. (4th Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Credits (credits)**
Compulsory Modules Internship							**2**	**30**
SSDM 8000 Internship Semester	Internship Semester (Internship)			X		see Internship Guidelines	2	30
Compulsory Modules for Consolidating Basic Mathematical, Scientific and Engineering Knowledge							**8**	**12**
SSDM 1000 Selected Chapters of Mathematics	Selected Chapters of Mathematics	0/1/3/0				WE 120	4	6
SSDM 1200 Applied Computer Science	Applied Computer Science	0/0/2/2				WE 120	4	6
Compulsory Modules for Consolidating Engineering Application							**12**	**18**
SSDM 2300 Applied Computational Fluid Dynamics	Applied Computational Fluid Dynamics		0/1/2/1			WE 120	4	6
SSDM 2400 Simulation in Mechanics & Processes	Simulation in Mechanics & Processes	0/1/3/0				WE 120	4	6
SSDM 5400 Vehicle Management Systems (incl. Simulation)	Vehicle Management Systems (incl. Simulation)		0/1/2/1			WE 120	4	6
Compulsory Modules with Interdisciplinary Content							**12**	**18**
SSDM 3200 International Economics & Trade	International Economics & Trade		0/0/4/0			CS 116	4	6
SSDM 3500 International Accounting	International Accounting	2/2/0/0				WE120	4	6
SSDM 6000 Scientific Work	Scientific Work		2/0/0/2			B 90	4	6
Compulsory Elective/Elective Modules for Consolidating Knowledge, Specialisation							**8**	**12**
WMSSDM XXXX Compulsory Elective module		see below						
WMSSDM XXXX Compulsory Elective module			see below					
Compulsory Modules Degree Completion							**0**	**30**
SSDM 9000 Master's Dissertation and Colloquium	Master's Dissertation				X	see *FPO*		24
	Master's Dissertation Colloquium				X	see *FPO*		6
Total SWS (Contact Hours per Week)		**20**	**20**	**2**			**42**	
ECTS Credits		**30**	**30**	**30**	**30**			**120**

Modules, Courses (contact hours per week: Lecture / Tutorial / Seminar-Style Lecture/ Laboratory or Seminar) Modules, courses (contact hours per week: Lecture / Tutorial / Seminar/ Laboratory or Seminar)						
Wahlpflicht / Wahlmodule (elective modules)		**1. Sem. (1st Sem.)**	**2. Sem. (2nd Sem.)**	**Prüfung (exam)**	**SWS (contact hours per week)**	**ECTS Punkte (points)**
Module Code and Name (module code and name)	**Lehrveranstaltung (course)**				**8**	**12**
WMSSDM 2000 Lightweight Materials and Materials Selection	Lightweight Materials and Materials Selection		0/0/3/1	WE 120	4	6
WMSSDM 2100 Renewable Energy Technology	Renewable Energy Technology	0/0/4/0		Pr 30	4	6
WMSSDM 2200 Project work	Project work	0/0/0/4		Pr 30	4	6
WMSSDM 2700 Thermodynamics of Multicomponent Systems	Thermodynamics of Multicomponent Systems	0/0/4/0		WE 120	4	6
WMSSDM 3000 Human Resources Management	Human Resources Management	0/0/4/0		CS 116	4	6
WMSSDM 3600 Quality in Automotive Industry	Quality in Automotive Industry	0/0/3/1		WE 120	4	6
WMSSDM 5100 Production	Production		0/0/4/0	WE 120	4	6
WMSSDM 5500 Vehicle Simulation & Test Drive	Vehicle Simulation & Test Drive		0/0/2/2	WA 30	4	6
WMSSDM 5600 Simulation in Logistics and Production	Simulation in Logistics and Production		0/0/0/4	Pr 45	4	6

Legend:

WE 120	Written examination, 120 minutes
WA 30	Written assignment, 30 hours
Pr 45	Presentation, 45 minutes
CS 116	Case study 116 hours
FPO	*Fachprüfungsordnung* (Subject-Specific Examination Regulations)

The examinations and regular examination dates are stipulated in § 7(3) of the Subject-Specific Examination Regulations.

(3) Students may choose the two required compulsory elective modules freely from the list of compulsory elective modules for the master's degree course Simulation and System Design. On submission of a written request to the examination board of the Faculty of Engineering, students may select one compulsory elective module taught in English as part of another master's degree course at UAS Stralsund to obtain the required 12 ECTS credits. Please refer to the stipulations pertaining to § 3(5) of the Subject-Specific Examination Regulations.

(4) For the types of examination, please refer to § 7(2-3) of the Subject-Specific Examination Regulations, according to which alternative types of examination to those listed above are possible.

(5) The detailed module descriptions with information about the person responsible for the module, study goals, contents and coursework/examinations are listed in the module handbook (Appendix 2).

Example with Explanations

Degree Course	Master's Degree Simulation and System Design
Name of module	
Code (module code)	SSDMXXXX or WMSSDMXXXX
Subtitle (if applicable)	
Classes (if applicable)	
Study semester	Planned for which semester according to course schedule?
Duration of module	
Frequency of module	
Person responsible for the module	Name of specific person
Lecturer	
Language	
Part of the curriculum	For all degree courses that the module is taught in: Degree course, field of study, compulsory/compulsory elective/elective module, semester
Type of course / SWS (contact hours per week)	Number of SWS and size of group, separated according to type of tuition, lecture, tutorial, practical, project work, seminar etc.
Workload	Workload, split into hours of tuition and hours of independent study, including preparation for examinations, listed in respective total hours
Credit points	The number of credit points that can be obtained according to ECTS
Requirements in accordance with the examination regulations	Which modules or types of preliminary assessed work for examinations, such as labs, must have been completed successfully prior to examination?
Recommended prerequisites	e.g. previous knowledge
Module goals / envisaged learning outcomes	Key question: Which learning outcomes should students obtain in this module? e.g. with regard to: • Knowledge: Knowledge of information, theory or facts • Skills: cognitive and practical skills that require the implementation of knowledge • Competencies: Integration of knowledge, skills, and social and methodological skills in working or learning situations e.g.: 'The students are aware/ know/ are able to...'
Contents:	The contents and level of the course should be made clear from the description.
Coursework/marked coursework/types of examination	Regular type of marked coursework required for credit points to be awarded
Types of media	
Literature	

III. Final Provisions

§ 9
Validity and Entry into Force

(1) These Study Regulations apply to all students who are subject to the Subject-Specific Examination Regulations of UAS Stralsund's master's degree course Simulation and System Design of 18th May 2017 .

(2) The provisions of the Study Regulations of the master's degree course Simulation and System Design at UAS Stralsund will apply for the first time to students who enrolled for winter semester 2017/2018.

(3) The Study Regulations enter into force on the day after they have been published on UAS Stralsund's website.

Issued on the basis of the resolution made by the Academic Senate of UAS Stralsund on 25th April 2017 and after approval by the Rector from 18th May 2017.

Stralsund, 18th May 2017

The Rector
of Hochschule Stralsund,
University of Applied Sciences,
Dr. Matthias Straetling

Publication note:
This statute was published on UAS Stralsund's website on 13th July 2017 .

Appendices

Appendix 1: *Praktikumsrichtlinie* (hereinafter Internship Guidelines)

Internship Semester

Contents:

1. Introduction

An internship semester must be completed as part of the 4-semester master's degree course Simulation and System Design. The goal of the internship semester is to apply the knowledge gained during undergraduate studies to day-to-day work situations and/or to gain subject-specific skills and knowledge, as well as being introduced to subject-specific work practice and common tasks of the future field of professional work.
The students are responsible for organising the internship semester themselves. UAS Stralsund supports the students with the organisation of their internship and advises them with regard to their choice of internship company.

2. Scope and Degree-Course Specific Contents of the Internship Semester

2.1. Scope

The internship semester covers a continuous internship period of at least 21 weeks. Periods of absence must generally be made up for. If the goal of the internship is not affected by the absence, it is not necessary for the absence to be made up for if it can be proven that the student is not responsible for his/her absence (e.g. illness, company closure, military manoeuvres) and the absence did not exceed a total of 6 working days.
The internship company must give the student an introduction to the tasks expected of him/her, its bordering areas and broader contexts. It would be desirable for them to take part in team meetings regarding their field of work and to give them an insight into related fields of work at the company.

The tasks expected of the student should be compatible with the student's subject knowledge and length of internship, correspond with the level of training and agree with the aims of the internship semester. It is recommended that the tasks should be structured and that the tasks expected are updated according to their progression and the current marginal conditions.

2.2. Degree-Course Specific Contents

The following aspects describe the expected content of the internship semester:
During their internship semester, students should work independently or in a team under expert leadership on tasks that belong to typical fields for graduates of the degree course Simulation and System Design.
The contents of the internship semester should be planned in such a way that degree-course specific problems can be considered using an appropriate amount of practice and theory.

3. Registration and Recognition of the Internship Semester

Prior to commencement, the students must register their internship semester with the member of staff responsible for internship semesters for their degree course. This person will decide on the recognition of the internship placement.
The internship shall be recognised with "successfully completed" or not recognised with "not successfully completed". This decision and the recognition will be granted by the respective subject representative in agreement with the Internship Officer. The students will be informed of the result. The recognition is based on the internship reports that are submitted by the students.

If at all possible, the internship report shall be completed by the students during their internships, the correctness of the report shall be checked and signed by the internship company, and it must be submitted to the respective subject representative within two weeks following the end of the internship. The report should be approximately 20 A4 pages long. In particular, the report should name the tasks that were given to the students and describe important work results. The report must provide details of the timeframe of the tasks and the respective functional meaning for the company. Further details on the kind and contents of the internship report can be made on agreement between the internship company and the supervising subject representative.
The activity report (see appendix) must be completed by the internship company and describes the kind and duration of tasks in the individual training sections. If periods of absence have occurred during the internship semester, the supervising subject representative at UAS Stralsund will decide in consultation with the member of staff responsible at the internship company, whether the absence will affect the recognition of the internship semester.
If the faculty first refuses to recognise the internship semester, it stipulates under which circumstances recognition could be granted.

4. Selection of Internship Placement

The internship semester must be completed outside of the university, at a company, an authority or institution (internship company).
The internship company shall make sure that the internship shall approach questions relevant to the degree course. The tasks of the professional internship semester have to complement the study contents in a useful manner or be appropriately related to the study contents.
The students are required to search for a suitable internship position. They apply for a suitable position as an intern. This must be named to and approved by the Faculty's Internship Officer at UAS Stralsund prior to the commencement of the internship semester.
If a student does not receive a position as an intern at the internship companies that s/he has applied to, UAS Stralsund will support the student in his/her search for an internship, by naming internship companies that have previously been willing to take on students.

5. Legal and Social Status of the Students

5.1. Legal Status

Unless otherwise stated in the University's *Grundordnung* (Basic Regulations), during the internship semester, students are enrolled as regular university students with all corresponding rights and obligations.

5.2. Payment

Students doing an internship semester have no legal entitlement to payment.

5.3. Insurance/Liability

During the internship semester, students are covered for work accidents by the trade association responsible for the internship company. The provisions of student health insurance in accordance with § 5(1)(10) SGB V also apply for students doing an internship semester.
However, in accordance with court rulings from the Federal Social Court, students are not required to pay into mandatory health, pension and unemployment insurances for employees (court ruling from the Federal Social Court of 17th December 1980, Ref.: 12 RK 10/79).
It is recommended that students take out liability insurance, if not already required by the internship company or the liability risk is not covered by the internship company's insurance.

5.4. Intern Contract

A contract signed by the student and the internship company shall form the legally binding basis for the internship relationship for the duration of the internship semester. This internship contract must be signed by the corresponding Internship Officer prior to the start of the internship semester.

The contract should make provisions for the following points:

a) Obligations of the internship company,

- to train the students in accordance with these guidelines for the internship semester for the duration of time that must be stipulated individually,
- to instruct the student with regard to valid regulations, in particular work regulations and health and safety regulations, as well as the provisions pertaining to confidentiality and secrecy,
- to allow the member of staff from UAS Stralsund overlooking the subject-specific aspects, to supervise the students,
- to provide the students with written proof of the kind and duration of the individual tasks,
- to check and sign the internship report that must be written by the students,
- to allow students to make up for periods of absence in accordance with 2.1,

b) Obligations of the students,

- to take advantage of the training opportunities on offer,
- to carry out the tasks transferred as part of the contract with due care,
- to obey orders from the internship company and persons commissioned by the internship company
- to observe the valid regulations, in particular work regulations and health and safety regulations, as well as the provisions pertaining to confidentiality and secrecy,
- to write an internship report,
- to inform the internship company immediately of any absence and, if the absence is due to illness, to submit a doctor's certificate by the 3rd day of illness.

c) Issues regarding the students' insurance cover

d) The possibility of termination prior to the agreed length of contract

It is possible for special provisions to be made between the internship company and the students.

The following persons will be named in the internship contract:
- the internship supervisor at the internship company,
- the respective Internship Officer at UAS Stralsund, and
- the subject representative supervising the subject aspects.

The enclosed contract (see appendix) should be used for completing the contract. Deviations from the contract must be checked by the Internship Officer and countersigned on approval.

6. Supervision of Students

An internship supervisor shall be named by the respective internship company, who shall plan the course of the internship semester with the students and supervise them during their internship at the company.

Students will also be supervised by the named subject representative at UAS Stralsund with regard to subject and organisational aspects. This person is also the contact for the internship company for any issues with regard to the realisation of the internship semester.

7. Completing Internship Semesters Abroad

The realisation of the internship semester at private and public companies and institutions abroad is desirable, if they are able to teach the knowledge and skills that correspond with the goal of the internship semester. Apart from students contacting companies independently, support can also be provided by corresponding companies after a request has been submitted to the International Affairs Officer at UAS Stralsund.

Activity Report

Mr.Ms./_____

born on _____ in _____

residential address: _____

was employed from _____ to _____

as a university intern to support professional training, as follows:

from	to	Weeks	Type of Employment

total number of weeks:

Days of absence during employment _____, of which _____ days were due to illness, _____ days due to other absence.

The internship report was written by the student and has been approved for submittal to UAS Stralsund.

_____
(Company stamp and signature)

Trainee Contract (sample, English version)

The following

CONTRACT

has been concluded:

between_____
(Company – Authority - Institution)

_____
(Name - Address – Telephone no.)

hereinafter internship company, and

Mr/Mrs/Ms _____

born on _____ in _____

resident in _____

student of _____

in the Department of _____

at UAS Stralsund,

hereinafter student.

§ 1
General

An internship semester at a company is compulsory for all students at UAS Stralsund. All regulations of the internship semester are part of this contract.

§ 2
Student Employment

The following work is provided for the employment of the student:

_____

_____

_____

_____

§ 3
Duties of Contract Partners

(1) The internship company commits

1. to employ the student for the period of _____ to _____

(minimum duration 21 weeks),

2. to allow him to attend examinations at UAS Stralsund,
3. to check and sign the student internship report,
4. to write a graded certificate for the student, if he so wishes,
5. to give the student a written certificate stating duration and kind of occupation,
6. to allow the student's tutor at UAS Stralsund to check on his progress,
7. to inform the student about all valid regulations, particularly work regulations, safety provisions and secrecy.

(2) The student commits,

1. to make use of the training opportunities on offer,
2. to work conscientiously,
3. to perform the tasks entrusted to him/her,
4. to observe the work regulations and safety provisions as well as regulations regarding professional secrecy,
5. to write an internship report,
6. to inform the place of training immediately in case of absence and to present a medical certificate within 3 days in case of illness.

§ 4
Entitlement to Remuneration and Reimbursement

_____

_____

§ 5
Internship Supervisor at the Company

The internship supervisor at the internship company is Mr/Mrs/Ms _____. S/he is also the point of contact for the student and the student's tutor at UAS Stralsund for all questions regarding the present contract.

§ 6
Insurance

(1) The student is responsible for his/her insurance cover during the period of the contract. By law, the student is insured by the relevant professional or trade association against accidents at work. In case of a claim against the insurance company, the internship company will send UAS Stralsund a copy of the accident report.

(2) If demanded by the internship company, the student must take out personal liability insurance for the period of his internship.

§ 7
Termination of Contract

If there is an urgent reason, this contract may be terminated at any time without notice. It can be terminated by a unilateral written declaration, put forward by one of the contract parties and should be addressed to the other party after consultation of the student's tutor.

§ 8
Copies of the Contract

Three identical copies of this contract have to be signed. Each party and UAS Stralsund receives a copy.

§ 9
Further Agreements

_____

_____

_____

_____ _____
(Place and Date) (Place and Date)

Internship Company: Student:

_____ _____
(Signature) (Signature)

UAS Stralsund will cooperate with the internship company in all questions regarding the internship period. UAS Stralsund's representative in accordance with § 5 of this contract, who
may be contacted by the company's internship supervisor, is

Mr/Mrs/Ms _____.
(Representative of the Department)

The student's tutor at UAS Stralsund is

Mr/Mrs/Ms _____.

UAS Stralsund will keep the internship company informed about all questions concerning the internship. Changes regarding the internship regulations will only be made after consulting the internship company.

_____ _____
(Place and Date) (Representative of the Department)

Appendix 2 Module Handbook

Compulsory Modules

The information provided in the following table in the row '*Studiensemester*/semester(s), in which module is taught' refer to the master's degree course with a standard length of study of three subject semesters. For the master's degree with a standard length of study of four subject semesters with the internship semester in the first subject semester, the modules from the first semester are moved to the third semester."

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Selected Chapters of Mathematics**
Kürzel / code	SSDM 1000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche / person responsible for the module	Prof. Dr. rer. Nat. Gunther Jäger
Dozent(in) / lecturer	Prof. Dr. rer. nat. Gunther Jäger
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Übung (Tutorial): 1 SWS Seminaristischer Unterricht (Seminar-style lecture): 3 SWS.
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulations	none
Empfohlene Voraussetzungen / recommended prerequisites	Knowledge of higher mathematics
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students know the concept and applications of systems of differential equations. They can apply numerical methods to solve initial value problems and boundary value problems. The students know and can apply the theory for solving systems of linear differential equations. They understand the fundamentals of the theory of partial differential equations.
Inhalt / contents	Systems of differential equations: Existence, uniqueness and stability of solutions; Numerical methods for approximating solutions using MATLAB. Boundary value problems: Numerical methods.

	Introduction to partial differential equations with examples:2-dimensional heat equation, wave equation and Laplace equation
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung; (written exam 120 minutes; for alternative forms of examination see examination regulations)
Medienformen / types of media	Blackboard, slides. Lecture notes to support self-study will be made available on ILIAS.
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Richard L. Burden, J. Douglas Faires: Numerical Analysis, 9th ed., Brooks/Cole, Cengage Learning Ward Cheney, David Kincaid: Numerical Mathematics and Computing, 6th ed., Thomson Brooks/Cole William Trench: Elementary Differential Equations with Boundary Value Problems, Brooks/Cole William Trench: Elementary Differential Equations, http://digitalcommons.trinity.edu/mon/8

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Applied Computer Science**
Kürzel / code	SSDM 1200
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Christine Wahmkow
Dozent(in) / lecturer	Prof. Dr.-Ing. Christine Wahmkow or others
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Seminatistischer Unterricht (Seminar-style lecture): 2 SWS Labor (Laboratory): 2 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Fundamental experience in application of a programming language
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students obtain the competence to describe extensive computer engineering systems to solve engineering problems. They will be able to recognise computer engineering problems and estimate the possibilities of solving them and/or are able to do it by themselves.
Inhalt / contents	Knowledge of cyber-physical systems, communication between objects in industrial environment, using different microcontrollers to develop and build examples and control different processes Basics of artificial intelligence; fuzzy logic and neural networks; application in examples and actual projects Automatic computer-aided design by using Solidworks-API
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung; (written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	panel painting, slides, software, microcontrollers, worksheets as PDF files to support self-study
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Massimo Banzi; Getting Started with Arduino; O'Reilly James A. Anderson ;An Introduction to Neural Networks Jeff Heaton; Introduction to Neural Networks for C#; Heaton Research API fundamentals; Training; SolidLine AG

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Applied Computational Fluid Dynamics**
Kürzel / code	SSDM 2300
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Heiko Meironke
Dozent(in) / lecturer	Prof. Dr.-Ing. Heiko Meironke
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Übung (Tutorial): 1 SWS Seminaristischer Unterricht (Seminar-style lecture): 2 SWS Labor (Laboratory): 1 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	basic knowledge of thermofluid dynamics
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	By the end of this course, the students are able to: • apply their fluid mechanics knowledge to complex flow problems • analyse a flow case and suggest a solution strategy in relation to the governing equation, simplifications and selected numerical method • setup and run numerical simulation of flow cases with CFD • scrutinise the credibility of results from numerical flow simulations (validation with theoretical or experimental data)
Inhalt / contents	• Basic concepts of numerical flow simulation • Physical / mathematical description of flows, • Basics of discretisation techniques and solution methods • Properties of numerical methods • Methods for steady and unsteady flows • In the exercises, the procedure and the flow simulations are applied to practical examples using commercial software FLUENT (ANSYS). • In experiments in the laboratory, the flow is measured by special objects and compared with the simulated data
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung

examination requirements and forms of examination)	(written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	panel painting, slides, presentations, PDF scripts are available for download and to support self-study
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Jiyuan Tu, Guan Heng Yeoh, and Chaoqun Liu, Computational Fluid Dynamics: A Practical Approach (2nd Edition), Butterworth-Heinemann, ISBN 978-0-0809-8243-4 Versteeg H.K. and Malalasekera W., An introduction to Computational Fluid Dynamics: The Finite Volume Method (2nd Edition), Prentice Hall, ISBN 978- 0131274983 Ferziger J. H. and Peric M., Computational Methods for Fluid Dynamics, Second, Springer, ISBN 978-3-642-56026-2

Studiengang /degree course	Master-Course Simulation and System Design
Modulbezeichnung / module name	**Simulation in Mechanics & Processes**
Kürzel / code	SSDM 2400
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr. Ing. Steven Dühring
Dozent(in) / lecturer	Prof. Dr. Ing. Steven Dühring
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Übung (Tutorial): 1 SWS Seminaristischer Unterricht (Seminar-style lecture): 3 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	Prüfungsvorleistung Projekt (preliminary assessed project work)
Empfohlene Voraussetzungen / recommended prerequisites	material science; application of linear differential equations
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	• Knowledge: Application of nonlinear equation systems, which are computer-assisted and symbolically solved for the simulation of mechanical and thermal problems using numerical methods • Skills: Analysis and assessment of the reliability of simulation results • Competences: Intellectual cross-interlocking and interaction of theoretical modelling, numerical exploration and simulation-specific application
Inhalt / contents	Lecture: • Modelling: Linear and nonlinear continuum mechanics, phenomenological material theory, thermo-mechanical couplings, structural mechanics, homogenisation methods • Algorithms: Numerical discretisation and solving methods of mechanics, finite element method, optimisation methods, programme development • Exercise: Practical work with the simulation software ANSYS® Multiphysics in ANSYS® Workbench (processing of various problems from mechanics, thermodynamics and production engineering)
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung

examination requirements and forms of examination)	(written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Lecture with slide/PPT presentation, work on blackboard and overhead projector notes; computer-assisted instruction in practical approach of the simulation software ANSYS® Multiphysics for modelling and simulation of technical/ process-related problems
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	• Lecture notes • Rust, W.: Nichtlineare Finite-Elemente-Berechnungen. Springer Vieweg, ISBN 978-3-658-13377-1 • Westermann, T.: Modellbildung und Simulation. Springer, ISBN 978-3-642-05460-0 • Aschendorf, B.: FEM bei elektrischen Antrieben 1. Springer Vieweg, 2014, ISBN 978-3-8348-0574-4, Kapitel 4&5 • ANSYS, Inc.: ANSYS Mechanical APDL Introductory Tutorials; ANSYS (will be provided during lecture) • Chung, Christopher A.: Simulation modeling handbook. CRC Press LLC USA, ISBN 0-8493-1241-8 • Nasdala, L.: FEM-Formelsammlung Statik und Dynamik. Springer Vieweg, ISBN 978-3-658-06629-1 • Krenk, S.: Non-linear Modeling and Analysis of Solids and Structures. Cambridge University Press, ISBN 978-0-521-83054-6 • if applicable in addition: will be announced during lectures

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Vehicle Management Systems (incl. Simulation)**
Kürzel / code	SSDM 5400
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Jens. Ladisch
Dozent(in) / lecturer	Prof. Dr.-Ing. Jens. Ladisch
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Übung (Tutorial): 1 SWS Seminaristischer Unterricht (Seminar-style lecture): 2 SWS Labor (Laboratory): 1 SWS, max. Gruppengröße (maximum group size) 15
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	Prüfungsvorleistung Labor (preliminary assessed coursework in the laboratory)
Empfohlene Voraussetzungen / recommended prerequisites	Basics in control theory, Basics in MATLAB/SIMULINK
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	After completion of the module, the students are able to describe the functions of vehicle management systems as well as implement software algorithms using advanced control technology (optimal and non-linear controls as well as control in the state space) and their embedded implementation by means of the software engineering tool MATLAB / SIMULINK. The concept of the "vehicle" is extended to include cars, aircraft and maritime systems of civilian and military or defence use. The students are to be enabled to abstract, conceive as well as signal related and system theoretical thinking in relations and gain access to transfer skills and problem-solving skills.
Inhalt / contents	Energy management, optimised accessories, engine control units, on-board diagnosis system design using optimal, nonlinear and state space controllers for automotive dynamic control systems for: Automotive systems (speed control, distance control, …), integrated navigational systems for vessels (navy, cargo-, passenger vessels) and submarines and their weapon guidance systems as well as flight control systems for combat aircraft, guided missiles and ballistic missiles

Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Tafel, Folien, Simulationssoftware, Lehrsoftware (panel painting, slides, simulation software, educational software)
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	ALKIN, Oktay. Signals and Systems. Hoboken: CRC Press, Description based upon print version of record. ISBN: 9781466598539. M. ETTER, Delores. Introduction to MATLAB®. Anju Mishra. 3. edition, global edition ed. Hoboken, NJ [u.a.]: Pearson, Always learning. F. FRANKLIN, Gene, DAVID POWELL, J. y ABBAS EMAMI-NAEINI, Feedback control of dynamic systems. H. S. Sanjay. 7. ed., Global ed. ed. Boston, Mass. [u.a.]: Pearson, Always learning. Authorized adaptation from the United States edition. L. PHILLIPS, Charles. Digital control system analysis & design. H. Troy Nagle and Aranya Chakrabortty. Fourth edition, global edition ed. Boston: Pearson, Always learning. G. WEBSTER, John. Measurement, Instrumentation, and Sensors Handbook, Second Edition. Halit Eren. 2nd ed ed. Hoboken: Taylor and Francis, Description based upon print version of record. ISBN: 9781439848913. Measurement, instrumentation, and sensors handbook. John G. Webster and Halit Eren. 2. ed. ed. Boca Raton, Fla. [u.a.]: CRC Press, Includes bibliographical references and index. ISBN: Spatial, mechanical, thermal, and radiation measurement. GRAHAM C. GOODWIN, STEFAN F. GRAEBE, MARIO E. SALGADO: Control System Design. Prentice Hall. ISBN: 0-13-958653-9. KATSUHIKO OGATA: Modern Control Engineering. Prentice Hall. ISBN: 0-13-060907-2. RICHARD C. DORF, ROBERT H. BISHOP: Modern Control Systems. Prentice Hall. ISBN: 0-13-127765-0.

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**International Economics & Trade**
Kürzel / code	SSDM 3200
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr. Petra Jordanov
Dozent(in) / lecturer	Prof. Dr. Petra Jordanov
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 4 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Economics
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Scope of the development trends in international economics with a focus on trade and state of the art regarding most important disputes in International trade (globalisation, trade policy, relations to emerging and developing countries etc.).
Inhalt / contents	Obtain requirements: - to provide a comprehensive overview of the current state of international trade and its statistical reflection, - to discuss the patterns of international trade on the scientific background (explanations and causes of international trade) and assessment of adequacy - to clarify the controversial discussion on foreign trade policy and its consequences - to explain and connect the material and monetary aspects of international trade. - understand responsibilities and tasks of international organisations (IMF, World Bank)
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Fallstudie 116 Stunden inklusive Präsentation; alternative Prüfungsleistungen siehe Fachprüfungsordnung; (Case study incl. presentation 116 hours; for alternative forms of examination see examination regulations)
Medienformen / types of media	Blackboard, slides, presentation, excerpts of the literature named below, self-study.

Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Balaam, D. N.; Veseth, M.: (Introduction to International Political Economy, 4th ed. (Upper Saddle River, NJ: Pearson Education International/Prentice Hall). Carpenter, M. A.; Dunung, S. P.: Challenges and opportunities in international business. Krugman, P.; Obstfeld, M.: International Economics. Theory and Policy. Parker, B.: Introduction to Globalization and Business. Relationships and Responsibilities. Suranovic, S.: International Economics: Theory and Policy.

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**International Accounting**
Kürzel / code	SSDM 3500
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1.
Dauer des Moduls / Duration of the module	1 semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr. rer. pol. Holger Türr
Dozent(in) / lecturer	Prof. Dr. rer. pol. Holger Türr
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Vorlesung (Lecture): 2 SWS Übung (Tutorial): 2 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	basic knowledge of accounting practices
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students receive a comprehensive introduction to financial reporting according the International Financial Reporting Standards (IFRS). They learn how the standards are used in the preparation of financial statements. The students understand the underlying concepts of Accounting using IFRS. They are able to solve easy and moderately difficult accounting problems.
Inhalt / contents	• regulatory framework, • IASB conceptual framework, • financial reporting in practice, e.g. accounting of property, plant and equipment, intangible assets, inventories, long-term production orders, financial instruments, provisions, deferred items • additional instruments of international financial reporting, e.g. cash flow statement, segment reporting
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; for alternative forms of see examination regulations)
Medienformen / types of media	
Literatur / reading list*	Harrison, Walter T., Horngreen Charles T., Thomas, C. William, Themin Suwardy: Financial Accounting. International Financial Reporting Standards, Pearson, 9. ed.

* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Kolitz, David: Financial Accounting. A Concepts-Based Introduction, Routledge Melville, Alan: International Financial Reporting: A Practical Guide, Pearson, 5. ed. Weygandt, Jerry J., Kimmel, Paul D., Kieso, Donald E.: Financial Accounting. IFRS Edition, Wiley, 3 ed.

Studiengang / Course of studies	Simulation and System Design (master's)
Modulbezeichnung / Module name	**Scientific work**
Code	SSDM6000
Lehrveranstaltungen, falls verfügbar / Courses, if applicable	
Studiensemester / Semester, in which module is taught	second
Dauer des Moduls / Duration of module	1 semester
Häufigkeit des Moduls / Frequency of module	Annually, each in the winter semester
Modulverantwortlicher / Person responsible for the module	Prof. Dr. Jan-Christian Kuhr
Dozent/ Lecturer	Prof. Dr. Jan-Christian Kuhr
Sprache / Language	English
Zuordnung zum Curriculum / Part of curriculum	Compulsory
Lehrform (Type of teaching) / SWS / contact hours per week	Lecture: 2 SWS Seminar / exercise: 2 SWS
Arbeitsaufwand / Work load	180 h (64 h contact time + 116 h self study)
Kreditpunkte/ Credit points	6
Voraussetzungen nach Prüfungsordnung / Requirements according to examination regulations	None
Empfohlene Voraussetzungen / Recommended prerequisites	
Modulziele (Module objectives) /angestrebte Lernziele (intended learning outcomes)	**Expertise**: The students – know the basics, standards and methods of scientific work – know the requirements placed on written scientific work (e.g. theses, research reports, publications) – know the requirements placed on delivering scientific lectures **Methodological skills**: The students – are able to design and organise engineering work according to academic standards – are able to independently produce technical documents that meet the high standards of scientific work – can give a scientific lecture in free speech and are well prepared for the subsequent discussion – are able to create a literature base of citable sources for a given topic

	– can communicate technical issues precisely, technically correctly and unambiguously – are able to use presentation tools for effective, efficient knowledge transfer **Other competencies**: The students – are familiar with the high quality standards that are placed on academic work – have internalised the code of scientific publishing
Inhalt / Content	Competence is imparted to work scientifically, to write, to talk, and to present. On the one hand, this includes the methodical procedure for the implementation of the master's dissertation and similar academic projects. On the other hand, the preparation of the written dissertation is dealt with in detail, as is the writing of peer-reviewed articles. Another focus is on the scientific lecture, such as that required as an oral colloquium of a dissertation. A final part is devoted to the presentation of scientific results in the form of posters.
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Belegarbeit 90 Stunden (Documentary work 90 hours)
Literatur / Literature	**M. Alley**: The Craft of Scientific Writing (2018) 4th edition; **M. Alley**: The Craft of Scientific Presentation (2013) 2nd edition **N. Rowe**: Academic & Scientific Poster Presentation (2017)

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Master's Dissertation and Colloquium**
ggf. Kürzel (Kurscode)	SSDM 9000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	3. im 3-semestrigen Studiengang (3rd for the 3-semester degree course) 4. im 4- semestrigen Studiengang (4th for the 4-semester degree course)
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jedes Semester (each semester)
Modulverantwortliche(r) / person responsible for the module	Studiengangsleiter/in (head of degree course)
Dozent(in) / lecturer	jeweils betreuende Prof. der Fakultät für Maschinenbau (respective professor at School of Mechanical Engineering)
Sprache / language	Englisch, alternativ siehe § 5 Absatz 4 Fachprüfungsordnung (English, alternative see § 5(4) examination regulations)
Zuordnung zum Curriculum / relation to curriculum	Pflichtmodul (Obligatory)
Lehrform (type of teaching) / SWS (contact hours per week)	none
Arbeitsaufwand / workload	900 hours (900 h self-study)
ECTS-Punkte / ECTS credit points	30 (Master's Dissertation: 24, Master's Colloquium: 6)
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	siehe §§ 5 und 7 der Fachprüfungsordnung (see §§ 5 and 7 examination regulations)
Empfohlene Voraussetzungen / recommended prerequisites	none
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Evidence that the students comply with the requirements for the master's degree according to § 2 of the study regulations. In particular, the students • provide evidence of in-depth theoretical knowledge beyond the subject-specific knowledge of their first degree; • show that they are able to solve complex problems and can find interdisciplinary approaches for new questions; • provide evidence of broad analytical skills; • show that they can apply their acquired knowledge and independently solve problems; • show that they can identify trends in engineering and future problems and demands and include them goal-orientedly in their work.
Inhalt / contents	Themenspezifisch (topic-specific contents)

Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Master's Dissertation (20 Wochen / 20 weeks); Umfang max. 100 Seiten zzgl. Gliederung und Anhang (number of pages max. 100 plus structure and annex); siehe / see §§ 24 – 26 Rahmenprüfungsordnung; Master-Colloquium (siehe / see § 27 Rahmenprüfungsordnung (General Examination Regulations)
Medienformen / types of media	
Literatur / reading list	

In addition to the compulsory modules named above, the course schedule for the 4-semester master's degree course Simulation and System Design, consists of the following supplementary components:

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Praktisches Studiensemester (Internship)**
Kürzel / code	SSDM 8000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. oder 3. (1st or 3rd)
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jedes Semester (each semester)
Modulverantwortliche(r) / person responsible for the module	Praktikumsbeauftragte(r) der Fakultät für Maschinenbau (Internship Coordinator at School of Mechanical Engineering)
Dozent(in) / lecturer	fachlicher Betreuer der Fakultät für Maschinenbau zusammen mit dem Betreuer des Praktikumsbetriebes (Professor at School of Mechanical Engineering together with the student's special supervisor at the internship company)
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Obligatory
Lehrform (type of teaching) / SWS (contact hours per week)	Seminar (Seminar): 2 SWS für nachbereitende Kolloquien (for follow-up colloquium)
Arbeitsaufwand / workload	900 hours (32 h contact time + 868 h self-study)
ECTS-Punkte / ECTS credit points	30
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulations	siehe Studienordnung, Anlage Praktikumsrichtlinie (see study regulations, appendix internship guidelines)
Empfohlene Voraussetzungen / recommended prerequisites	
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students apply the knowledge acquired in their first degree of studies or in the modules taken so far in their present degree course to solve practical problems at a company. They acquire professional skills and knowledge and get acquainted with subject-specific problems and tasks from their future fields of activity.
Inhalt / contents	entsprechend den im Praktikumsvertrag festgehaltenen und von der Hochschule genehmigten Tätigkeiten während des Praktikums (in accordance with the activities stipulated in the internship contract and approved by the University)
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Praxisbericht, ca. 20 Seiten (internship report, ca. 20 pages) Präsentation des Praxisberichts, ca. 30 Minuten (presentation, ca. 30 minutes)

	Tätigkeitsnachweis (activity report) siehe Studienordnung, Anlage Praktikumsrichtlinie (see study regulations, appendix internship guidelines)
Medienformen / types of media	
Literatur / reading list	

Compulsory Elective Modules

The information provided in the following table in the row '*Studiensemester*/semester(s), in which module is taught' refer to the master's degree course with a standard length of study of three subject semesters. For the master's degree with a standard length of study of four subject semesters with the internship semester in the first subject semester, the modules from the first semester are moved to the third semester.

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Lightweight Materials and Materials Selection**
Kürzel / code	WMSSDM 2000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Petra Maier
Dozent(in) / lecturer	Prof. Dr.-Ing. Petra Maier
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 3 SWS Labor (Laboratory): 1 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	Prüfungsvorleistung Labor (preliminary assessed coursework in the laboratory)
Empfohlene Voraussetzungen / recommended prerequisites	Grundkenntnisse Werkstofftechnik (basic knowledge of materials technology)
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	After completion of the course, the students have knowledge about modern lightweight materials for the development and manufacture of lightweight structures and construction materials. They are capable of selecting materials, for example of vehicle components with regards to weight reduction, prize, minimising process steps and performance optimisation.
Inhalt / contents	Lightweight Materials: Car body materials (high strength steel, high deformation steel, light metal alloys Al, Mg and Ti, polymer and metal composites and sandwich structures, glasses, metal foams, corrosion and corrosion protection), engine materials (high temperature materials, light metal castings, ceramics), materials for selected car undercarriage parts (exhaust, axles, transmission, bearings), polymers material selection: General aspects and analytical methods of materials

	selection (cost versus performance), requirements for materials in automotive, influence of modern technologies, laboratory classes: Grantas CES EduPack software, material testing of mechanical properties of modern materials: compression test of Al foam and r- and n- values of metal sheets, corrosion resistance of selected materials, SEM and fractography, reverse engineering
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Unterlagen werden als PDF-Datei zum Herunterladen zur Verfügung gestellt (PDF scripts are available for download)
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Ashby: Materials Selection in Mechanical Design 3rd Edition, Elsevier Ashby: Materials - engineering science processing and design, Elsevier Rösler: Mechanical Behaviour of Engineering Materials, Springer Mitchell: An Introduction to Materials Engineering and Science for Chemical and Materials Engineers, Wiley Berns, Theisen: Ferrous materials - Steel and Cast Iron, Springer

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Renewable Energy Technology**
Kürzel / code	WMSSDM 2100
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Matthias Ahlhaus
Dozent(in) / lecturer	Prof. Dr.-Ing. Matthias Ahlhaus
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 4 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Basic knowledge and relation of energy technology
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Students broaden their basic knowledge of energy technology by learning technical, economical and ecological facts and interaction of different renewable energy technologies. They understand opportunities, restraints and problems when using them for heating, power generation and mobility and are able to balance competing solutions.
Inhalt / contents	Profound presentations focus on technical, economical and ecological aspects and affect political and social impacts of the following renewable energy topics: Solar energy for heat and power, bioenergy, wind, water, geothermal energy, alternative mobility, energy storage and distribution, climate change.
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Präsentation 30 Minuten mit anschließender wissenschaftlicher Verteidigung und Diskussion; alternative Prüfungsleistungen siehe Fachprüfungsordnung (Presentation 30 minutes with subsequent academic defence and discussion; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Presentations, video, blackboard, slides
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	G.N.Tiwari, R.K.Mishra: Advanced Renewable Energy Sources; RSC Publishing, ISBN 978-1-84973-380-9 List of eligible topics and additional literature will be presented in introductory lecture.

Studiengang /degree course	Master-Study Simulation and System Design
Modulbezeichnung / module name	**Project work**
Kürzel / code	WMSSDM 2200
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Matthias Ahlhaus
Dozent(in) / lecturer	jeweils betreuende Prof. der Fakultät für Maschinenbau (respective professor at School of Mechanical Engineering)
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminar (Seminar): 1 SWS Labor (Laboratory): 3 SWS
Arbeitsaufwand / workload	180 hours (180 h self study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulations	none
Empfohlene Voraussetzungen / recommended prerequisites	Grundlagenkenntnisse bezüglich des zu bearbeitenden Projektes (basic knowledge suitable for elected topic)
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Students broaden their basic knowledge by choosing one of the provided topics and preparing individual project work.
Inhalt / contents	Topic and contents of the individual project work is related to the degree course. The project work deepens basic background understanding and provides advanced knowledge. Topics of study focus on technical, economic and ecological aspects and affect political and social impacts.
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Präsentation 30 Minuten mit anschließender wissenschaftlicher Verteidigung und Diskussion; alternative Prüfungsleistungen siehe Fachprüfungsordnung (Presentation 30 minutes with subsequent academic defence and discussion; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Presentations, video, blackboard, slides
Literatur / reading list	List of eligible topics and relevant literature will be presented in introductory lecture

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Thermodynamics of Multicomponent Systems**
Kürzel / code	WMSSDM 2700
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Franka-Maria Mestemacher
Dozent(in) / lecturer	Prof. Dr.-Ing. Franka-Maria Mestemacher
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 4 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Fundamentals of technical mechanics
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students know the fundamentals of thermodynamics of multiphase systems. They are able to set up the equations phase equilibria. They know the concepts of gE-Modelling.
Inhalt / contents	Fundamentals of Thermodynamics - 1st and 2nd law of thermodynamics - Fundamental equations - MAXWELL relations Thermodynamics of pure substances - Ideal and real gases - Fugacity - Virial equation - Phase equilibria of pure substances thermodynamics of mixtures - Ideal/real mixtures - Vapour-liquid-equilibria - Liquid-liquid-equilibria - Modelling of gE
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Presentations, video, blackboard, slides

Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Gmehling et al.: Chemical Thermodynamics. Wiley-VCH, Weinheim Sandler: Thermodynamics. Wiley, Hoboken, NJ

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Human Resources Management**
Kürzel / code	WMSSDM 3000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr. Petra Jordanov
Dozent(in) / lecturer	Prof. Dr. Petra Jordanov
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 4 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Economics / human resources management / economic law
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	- Theoretical and empirical understanding of organisational and cultural conditions for HRM in a globalised world and esp. challenges related to demographic change. - Be able to provide and coordinate HRM activities to solve all tasks performed in an organisation with respect to its goals and based on scientific methods and tools.
Inhalt / contents	- Landscape/ HRM concepts/ distinction IHRM - Organisational, cultural and societal context - Diversity management - Intercultural training - Strategic HRM
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Fallstudie 116 Stunden inklusive Präsentation; alternative Prüfungsleistungen siehe Fachprüfungsordnung; (Case study incl. presentation 116 hours; for alternative forms of examination see examination regulations)
Medienformen / types of media	presentation, current articles, slides
Literatur / reading list*	Bohlander, G.W.; Snell, S.A.: Principles of Human Resource Management. 16th edition. South Western Learning. Bourdieu, P.: Ökonomisches Kapital, kulturelles Kapital, soziales Kapital. In: *Soziale Ungleichheiten* (Soziale Welt, Sonderheft 2), edited by Reinhard Kreckel. Goettingen: Otto Schartz & Co. 1983. pp. 183-98. The article appears

* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	here for the first time in English. Translated by Richard Nice. Hofstede, G., Culture's Consequence, Thousand Oaks, CA: Sage Publications. Hofstede, G., "Images of Europe: Past, Present and Future", in: Warner M., Joynt P. (eds), Managing Across Cultures. Padstow: Thompson. Rothlauf, J.: A global view on intercultural management. Oldenbourg.

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Quality in Automotive Industry**
Kürzel / code	WMSSDM 3600
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr. Ing. Normen Fuchs
Dozent(in) / lecturer	Prof. Dr. Ing. Normen Fuchs
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 3 SWS Labor (Laboratory): 1 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Basics of quality management
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students are well versed in organisational and statistical methods to implement and maintain quality management systems in organisations with reference to automotive industry. Methods and concepts of quality management in automotive industry can be applied. Particular focus on zero defects objective. The students have the ability to implement the requirements of the applicable quality standard in its current issue.
Inhalt / contents	Quality management systems and standards, used in automotive industry. ISO 9001, ISO/TS 16949, International Automotive Task Force IATF. Process approach: quality management system; management responsibility; resource management, product realisation; measurement analysis and improvement. Customer focus, corrective and preventive actions, Total Quality Management, Six Sigma, statistical methods, capability, statistical process control, measuring systems analysis, production part approval process, production process release procedure
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; for alternative kinds of examination see examination regulations)
Medienformen / types of media	Blackboard / white board, PowerPoint, scripts (pdf-format)
Literatur / reading list*	ISO/TS 16949 current edition

* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	current state of QM-literature, stated in the lecture

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Production**
Kürzel / code	WMSSDM 5100
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Hein-Peter Landvogt
Dozent(in) / lecturer	Prof. Dr.-Ing. Hein-Peter Landvogt
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 4 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Knowledge of higher mathematics and statistics. It is recommended to take the elective module WMSSDM 5600 Simulation in Logistic and Production at the same time
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students • have an overview of the most important aspects of industrial production. • know the method of value-stream mapping for modelling value-added chains in production companies. • have learned to apply the design guidelines for lean production. • have learned how dynamic effects affect the behaviour of linked manufacturing facilities. • have recognised how the lack of quality in production and logistics impacts the manufacturing costs of the products.
Inhalt / contents	• Value-stream mapping and design • Stock management • Balancing of production systems • Basics of production planning and control • Design of queuing systems • Basics of predetermined motion time systems (MTM)
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung

examination requirements and forms of examination)	(written exam 120 minutes; for alternative kinds of examination see examination regulation)
Medienformen / types of media	Lectures and exercises. Lecture notes are provided as a PDF document. PowerPoint presentations, videos and sequences of group work
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Klaus Erlach: Value Stream Design : The Way Towards a Lean Factory; Springer Verlag

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Vehicle Simulation & Test Drive**
Kürzel / code	WMSSDM 5500
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Peter Roßmanek
Dozent(in) / lecturer	Prof. Dr.-Ing. Peter Roßmanek
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 2SWS Labor (Laboratory): 2 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	none
Empfohlene Voraussetzungen / recommended prerequisites	Automotive Engineering I/II or comparable previous knowledge
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The student is able to model a vehicle and the surroundings (road and traffic), then perform a vehicle dynamic simulation on a computer and verify the results in experimental investigations.
Inhalt / contents	Presentation of different simulation programmes for the interpretation of the driving behaviour of motor vehicles, modelling of own developments, simulation calculation of existing test vehicles and experimental verification of the results.
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Beleg 30 Stunden, alternative Prüfungsleistungen siehe Fachprüfungsordnung; (Assignment 30 hours: experimental investigation on the real vehicle or simulation using appropriate software; for alternative kinds of examination see examination regulation)
Medienformen / types of media	scripts are available
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest	Mitscke, M.: Dynamik der Kraftfahrzeuge Band C - Fahrverhalten, Springer Roddeck, W.: Einführung in die Mechatronik, Vieweg+Teubner Braess, H.-H., Seiffert, U.: Handbuch Kraftfahrzeugtechnik, Vieweg+Teubner Laschet, A.: Systemanalyse in der Kfz-Antriebstechnik I - Modellierung, Simulation und Beurteilung von Fahrzeugantrieben, expert

editions are used and recommended for the lectures)	Milliken, D., Milliken, W., Kasprzak, E., Metz, L.: Race Car Vehicle Dynamics, SAE

Studiengang /degree course	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	**Simulation in Logistics and Production**
Kürzel / code	WMSSDM 5600
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	1. or 2.
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (once a year)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Wilhelm Petersen
Dozent(in) / lecturer	Prof. Dr.-Ing. Wilhelm Petersen
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminar (Seminar): 2 SWS Labor (Laboratory): 2 SWS
Arbeitsaufwand / workload	180 hours (64 h contact time + 116 h self-study)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	Regelmäßige aktive Teilnahme an Seminaren und Laboren, Prüfungsvorleistung Programmierung eines Simulationsproblems (Selbststudium). (Regular active attendance at seminars and lab work, prerequisite programming of a simulation problem (self-study))
Empfohlene Voraussetzungen / recommended prerequisites	Skills in object-oriented programming, Basic knowledge of business studies and economics; combination with WMSSDM 5100 Production is recommended
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Knowledge of discrete event simulation for application in logistics in theory and practice; skills in modelling and applying theory of simulation for solving practical problems in logistics and production; competencies in integrating knowledge and skills as well as the ability to apply and develop new solutions of discrete event simulation in logistics.
Inhalt / contents	The course emphasises the fundamental concepts, aims, methods and the importance of discrete event simulation for planning and optimisation of logistics and production in modern industries. In the context of the evolutions of simulation technologies, the advanced principles and strategies are exposed.
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Präsentation mit Kolloquium 45 Minuten, alternative Prüfungsleistungen siehe Fachprüfungsordnung; (presentation with colloquium 45 minutes, for alternative kinds of examination see examination regulations)

Medienformen / types of media	Seminar with blackboard and beamer presentation, experiments with a simulation framework
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (the latest editions are used and recommended for the lectures)	Bala, Bilash Kanti; Fatimah, Mohamend Arshad; Noh, Kusairi Mohd: System Dynamics: Modelling and Simulation, Singapore: Springer Waldmann, Karl-Heinz; Helm, Werner E.: Simulation Stochastischer Systeme, Heidelberg: Springer Gabler Bungartz, Hans-Joachim et. al.: Modellbildung und Simulation, Berlin: Springer Spectrum more in the course