

**Erste Satzung zur Änderung der Studienordnung
für den Master-Studiengang Simulation and System Design
an der Hochschule Stralsund**

vom 06. August 2019

Aufgrund von § 2 Absatz 1 in Verbindung mit § 39 Absatz 1 des Gesetzes über die Hochschulen des Landes Mecklenburg-Vorpommern (Landeshochschulgesetz –LHG M-V) in der Fassung der Bekanntmachung vom 25. Januar 2011 (GVOBl. M-V S. 18), zuletzt geändert durch Artikel 3 des Gesetzes vom 11. Juli 2016 (GVOBl. M-V S. 550, 557), erlässt die Hochschule Stralsund die folgende Änderungssatzung:

Artikel 1

Anlage 2: Modulhandbuch der Studienordnung für den Master-Studiengang Simulation and System Design an der Hochschule Stralsund vom 18. Mai 2017 (veröffentlicht auf der Homepage der Hochschule Stralsund) wird wie folgt geändert:

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Anlage 2: Modulhandbuch

Pflichtmodule

Nachfolgende Tabellenangaben zum „Studiensemester/semester(s), in which module is taught“ beziehen sich auf den Master mit einer Regelstudienzeit von drei Fachsemestern. Beim Master mit einer Regelstudienzeit von vier Fachsemestern, Lage des praktischen Studiensemesters (Internship) im ersten Fachsemester, erhöht sich die Angabe „Studiensemester/semester(s), in which module is taught“ um ein Semester.

Studiengang / course of studies	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 (annually)
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 / content	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 the 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 regulation)
Medienformen / types of media	Black board, 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 (latest editions will be 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 /course of studies	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 (annually)
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 experiences in application of a programming language
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students get the competence to describe extensive computer engineering systems to solve engineering problems. They will be able to recognize computer engineering problems and estimate the possibilities of solving and/or could do it by themselves.
Inhalt / content	Knowledge about cyber-physical systems, communication between objects in industrial environment, using different microcontrollers to develop and built 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; alternative examination performances see examination regulation)
Medienformen / types of media	panel painting, transparencies, software, microcontrollers, worksheets as PDF files to support self-study
Literatur / reading list*	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
* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and	

recommended for the lectures)

Studiengang /course of studies	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 (annually)
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 in thermofluidynamics
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	By the end of this course, the students are able to: <ul style="list-style-type: none"> • 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 / content	<ul style="list-style-type: none"> • Basic concepts of numerical flow simulation • Physical / mathematical description of flows, • Basics of discretization techniques and solution methods • Properties of numerical methods • Methods for steady and unsteady flows • In the exercises, the procedure and the flow simulations are given 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 examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; alternative examination performances see examination regulation)
Medienformen / types of media	panel painting, transparencies, 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 (latest editions will be 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 /course of studies	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 (annually)
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 (Prerequisite passed semester work)
Empfohlene Voraussetzungen / recommended prerequisites	material science; application of linear differential equations
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	<ul style="list-style-type: none"> • Knowledge: Application of nonlinear equation systems, which are computer-assisted and symbolically solved for the simulation of mechanical and thermal problems by 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 / content	<p>Lecture:</p> <ul style="list-style-type: none"> • Modeling: Linear and nonlinear continuum mechanics, phenomenological material theory, thermo-mechanical couplings, structural mechanics, homogenization methods • Algorithms: Numerical discretization and solving methods of mechanics, finite element method, optimization methods, program 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/	Klausur 120 Minuten; alternative Prüfungsleistungen siehe

Prüfungsformen (study and examination requirements and forms of examination)	Fachprüfungsordnung (written exam 120 minutes; alternative examination performances see examination regulation)
Medienformen / types of media	Lecture with slide/PPT presentation, work on black board and overhead projector notices; 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 (latest editions will be used and recommended for the lectures)	<ul style="list-style-type: none"> • 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 /course of studies	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 (annually)
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 (Prerequisite 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 vehicle management systems function as well as to 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, aircrafts and maritime systems of civilian and military or defense use. The students are to be enabled to abstract, conceptual, as well as signal related and system theoretical thinking in relations and gain access to transfer skills and problem solving skills.
Inhalt / content	Energy management, optimized accessories, Engine control units, On-Board-Diagnose 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 aircrafts, guided missiles and ballistic missiles

Studiengang /course of studies	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 (annually)
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 (Globalization, Trade policy, Relations to Emerging and Developing countries etc.).
Inhalt / content	Get requirements: <ul style="list-style-type: none"> - to provide a comprehensive overview of the current state of the 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 the international trade. - Understand responsibilities and tasks of international organizations (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 regulation)
Medienformen / types of media	Black board, slides, presentation, excerpts of the literature named below, self-study.

<p>Literatur / reading list*</p> <p>* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)</p>	<p>Balaam, D. N.; Veseth, M.: (Introduction to International Political Economy, 4th ed. (Upper Saddle River, NJ: Pearson Education International/Prentice Hall).</p> <p>Carpenter, M. A.; Dunung, S. P.: Challenges and opportunities in international business.</p> <p>Krugman, P.; Obstfeld, M.: International Economics. Theory and Policy.</p> <p>Parker, B.: Introduction to Globalization and Business. Relationships and Responsibilities.</p> <p>Suranovic, S.: International Economics: Theory and Policy.</p>
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Studiengang /course of studies	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 (annually)
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 get 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 / content	<ul style="list-style-type: none"> • 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; alternative examination performances see examination regulation)
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 (latest editions will be 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	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	Master's Thesis and Colloquium
ggf. Kürzel (Kurscode)	SSDM 9000
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	3. im 3-semesterigen Studiengang (3 rd for the 3-semester programme) 4. im 4- semesterigen Studiengang (4 th for the 4-semester programme)
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 course of studies)
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 paragraph 4 examination regulation)
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 Thesis: 27, Master-Colloquium: 3)
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	siehe §§ 5 und 7 der Fachprüfungsordnung (see §§ 5 and 7 examination regulation)
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 <ul style="list-style-type: none"> • 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 / content	Themenspezifisch (topic-specific content)

Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Master's Thesis (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)
Medienformen / types of media	
Literatur / reading list	

Zusätzlich zu den oben aufgeführten Pflichtmodulen setzt sich der Studienplan für den 4-semesterigen Master-Studiengang Simulation and System Design wie folgt zusammen:

Studiengang /course of studies	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. (1 st or 3 rd)
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 of the training enterprise)
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 course of studies to solve practical problems in a company. They acquire professional skills and knowledge and get acquainted with subject-specific problems and tasks from their future fields of activity.
Inhalt / content	entsprechend den im Praktikumsvertrag festgehaltenen und von der Hochschule genehmigten Tätigkeiten während des Praktikums (in accordance with the activities stipulated in the trainee 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	

Wahlpflichtmodule

Nachfolgende Tabellenangaben zum „Studiensemester/ semester(s), in which module is taught“ beziehen sich auf den Master mit einer Regelstudienzeit von drei Fachsemestern. Beim Master mit einer Regelstudienzeit von vier Fachsemestern, Lage des praktischen Studiensemester (Internship) im ersten Fachsemester, erhöht sich die Angabe „Studiensemester/ semester(s), in which module is taught“ um ein Semester.

Studiengang /course of studies	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 (annually)
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 (Prerequisite laboratory)
Empfohlene Voraussetzungen / recommended prerequisites	Grundkenntnisse Werkstofftechnik (basic knowledge 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, minimizing process steps and performance optimization.
Inhalt / content	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

	<p>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</p>
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; alternative examination performances see examination regulation)
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 (latest editions will be 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 /course of studies	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 (annually)
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, restrains and problems by using them for heating, power generation and mobility and are able to balance competing solutions.
Inhalt / content	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 defense and discussion; alternative examination performances see examination regulation)
Medienformen / types of media	Presentations, video, black board, transparencies
Literatur / reading list* * es werden immer die aktuellsten Auflagen verwendet und in den	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

Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)

presented in introducing lecture.

Studiengang /course of studies	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 (annually)
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 issue)
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	Students broaden their basic knowledge by choosing one of the actual offered topics and preparing an individual project work.
Inhalt / content	Topic and content of the individual project work is related to the study program. The project work deepens understanding basic background and provides advanced knowledge. Topics of study work 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; alternative examination performances see examination regulation)
Medienformen / types of media	Presentations, video, black board, transparencies
Literatur / reading list	List of eligible topics and relevant literature will be presented in introducing lecture

Studiengang /course of studies	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	Automotive Lighting Engineering
Kürzel / code	WMSSDM 2500
ggf. Lehrveranstaltungen / courses, if applicable	
Studiensemester / semester(s), in which module is taught	2. (winter semester, darkness is needed)
Dauer des Moduls / Duration of the module	1 Semester
Häufigkeit des Modulangebots / frequency of module offer	jährlich (annually)
Modulverantwortliche(r) / person responsible for the module	Prof. Dr.-Ing. Mark Vehse
Dozent(in) / lecturer	Prof. Dr.-Ing. Mark Vehse
Sprache / language	English
Zuordnung zum Curriculum / relation to curriculum	Elective
Lehrform (type of teaching) / SWS (contact hours per week)	Seminaristischer Unterricht (Seminar-style lecture): 2 SWS Labor (Laboratory): 2 SWS; max. Gruppengröße (maximum group size) 15 Scheinwerfertest in Nachtsituationen (Headlamp test in night-situation); max. Gruppengröße (maximum group size) 15
Arbeitsaufwand / workload	180 hours (64 h contact time + 110 h self-study + 6 h night-time-situation test)
ECTS-Punkte / ECTS credit points	6
Voraussetzungen nach Prüfungsordnung / requirements according to the examination regulation	Prüfungsvorleistung Präsentation 15 Minuten der Simulationsergebnisse (Labor) (Prerequisite presentation 15 minutes of simulation results (lab))
Empfohlene Voraussetzungen / recommended prerequisites	gute CAD-Kenntnisse (well grounded CAD skills), Grundkenntnisse optische Systeme (basic knowledge in optical systems)
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	After completion the module, the students are able to understand, draft and simulate basic automotive lighting systems. Thereby they are familiar with requirements of optics, physiology of human eyes and relevant vehicle regulations. They got the competence to use CAD, Raytracing and virtual analyzing tools to design automotive lighting products.
Inhalt / content	<ul style="list-style-type: none"> • Principles of optics and lighting engineering, • Optical components and light sources (Automotive), photometry, • Colorimetry, • Physiology of human eyes, • Raytracing and Visualization, • Virtual light shape analyzing, • Vehicle regulations (ECE, SAE) containing topics to

	automotive lighting systems
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 90 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 90 minutes; alternative examination performances see examination regulation)
Medienformen / types of media	Tafel, interaktive Präsentationen, CAD, Simulationssoftware (black board, interactive slides, CAD, simulation software)
Literatur / reading list*	<ul style="list-style-type: none"> • Hering, Martin, Stohrer: Physik für Ingenieure, Springer Vieweg, ISBN 978-3-662-49355-7 • Zinth & Zinth: Optik – Lichtstrahlen, Wellen, Photonen, Oldenbourg Verlag München, ISBN 978-3-486-70534-8 • Hentschel: Licht und Beleuchtung: Grundlagen und Anwendungen der Lichttechnik, Hüthig Verlag Heidelberg, ISBN 978-3-7785-2817-4 • Eckert: Lichttechnik und optische Wahrnehmungssicherheit im Straßenverkehr, Verl. Der Technik Berlin, ISBN 978-3341010723 • Krafftahrttechnisches Taschenbuch, Robert-Bosch GmbH, Springer Vieweg, ISBN 978-3-658-03800-7 • Pischinger, Seiffert: Vieweg Handbuch Krafftfahrzeugtechnik, Springer Vieweg, ISBN 978-3-658-09528-4 • ECE Regulations R1-R8, R19/20, R31, R48, R56/57, R76/77, R87, R98, R99, R112, R113, R119, R123, R128 u.a. • US-Regulations: FMVSS 108, SAE J222, SAE J585-J588, SAE J592e, J594, J2087
* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)	

Studiengang /course of studies	Master-Studiengang Simulation and System Design
Modulbezeichnung / module name	Advanced Technical Mechanics
Kürzel / code	WMSSDM 2600
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 (annually)
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 have advanced theoretical knowledge of Technical Mechanics and are able to apply this in Engineering problems. They are able to set up the Governing Equations of the Boundary Value Problem of Linear Elasticity in curvilinear coordinates. They have further knowledge in analytical solutions of the Linear Boundary Problem.
Inhalt / content	<ul style="list-style-type: none"> - Tensor Algebra and Analysis in Curvilinear Coordinates - Basic Concepts of Continuum Mechanics - Governing Equations of the Linear Theory of Elasticity - The Boundary-Value-Problem - Analytic Solutions - Weak Form of Linear-Elastic Boundary-Value-Problem - The Plane Problem of Linear Theory of Elasticity - AIRY's Stress Function - Special Problems
Studien-/ Prüfungsleistungen/ Prüfungsformen (study and examination requirements and forms of examination)	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; alternative examination performances see examination regulation)
Medienformen / types of media	Presentations, video, black board, transparencies
Literatur / reading list*	de Souza Sánchez Filho: Tensor Calculus for Engineers

<p>* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)</p>	<p>and Physicists. Springer, Heidelberg Gould, Feng: Introduction to Linear Elasticity. Springer, Heidelberg</p>
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Studiengang /course of studies	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 (annually)
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 / content	<p>Fundamentals of Thermodynamics</p> <ul style="list-style-type: none"> - 1. and 2. Law of Thermodynamics - Fundamental Equations - MAXWELL-Relations <p>Thermodynamics of Pure Substances</p> <ul style="list-style-type: none"> - Ideal and Real Gases - fugacity - Virial Equation - Phase Equilibria of Pure Substances <p>Thermodynamics of Mixtures</p> <ul style="list-style-type: none"> - Ideal/Real Mixtures - Vapor-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; alternative examination performances see examination regulation)
Medienformen / types of	Presentations, video, black board, transparencies

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

Studiengang /course of studies	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 (annually)
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 / personnel management / economic law
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	<p>- Theoretical and empirical understanding of organizational and cultural conditions for HRM in a globalized world and esp. challenges refer to demographic change.</p> <p>- Be able to provide and coordinate HRM activities to solve all tasks performed in an organization with respect to its goals and based on scientific methods and tools.</p>
Inhalt / content	<ul style="list-style-type: none"> - Landscape/ HRM concepts/ Distinction IHRM - Organizational, 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 regulation)
Medienformen / types of media	presentation, current articles, slides
Literatur / reading list*	<p>Bohlander, G.W.; Snell, S.A.: Principles of Human Resource Management. 16th edition. South Western Learning.</p> <p>Bourdieu, P.: Ökonomisches Kapital, kulturelles Kapital, soziales Kapital. In: <i>Soziale Ungleichheiten</i> (Soziale Welt, Sonderheft 2), edited by Reinhard Kreckel. Goettingen: Otto Schartz & Co. 1983. pp. 183-98. The article appears</p>

* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be 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 /course of studies	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 (annually)
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. Especially the zero defects objective will be focused. The students have the ability, to implement the requirements of the applicable quality standard in its current issue.
Inhalt / content	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 realization; measurement analysis and improvement. Customers 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; alternative examination performances see examination regulation)

Medienformen / types of media	Black board / white board, PowerPoint, skript (pdf-format)
Literatur / reading list*	ISO/TS 16949 current revision current state QM-literature, stated in the lecture
* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)	

Studiengang /course of studies	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 (annually)
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 statistic. It is recommended to listen in parallel the elective module WMSSDM 5600 Simulation in Logistic and Production
Modulziele (module objectives) / angestrebte Lernergebnisse (intended learning outcomes)	The students <ul style="list-style-type: none"> • have got an overview of the most important aspects of industrial production. • know the method of value-stream mapping for modeling 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 recognized how the lack of quality in production and logistics impacts the manufacturing costs of the products.
Inhalt / content	<ul style="list-style-type: none"> • 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 examination requirements and	Klausur 120 Minuten; alternative Prüfungsleistungen siehe Fachprüfungsordnung (written exam 120 minutes; alternative examination

forms of examination)	performances 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 (latest editions will be used and recommended for the lectures)	Klaus Erlach: Value Stream Design : The Way Towards a Lean Factory; Springer Verlag

Studiengang /course of studies	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 (annually)
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 / content	Presentation of different simulation programs for the interpretation of the driving behavior of motor vehicles, modeling 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; alternative examination performances see examination regulation)
Medienformen / types of media	scripts are available
Literatur / reading list*	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
* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest	

editions will be used and recommended for the lectures)

Fahrzeugantrieben, expert
Milliken, D., Milliken, W., Kasprzak, E., Metz, L.: Race Car
Vehicle Dynamics, SAE

Studiengang /course of studies	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 (annually)
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 in 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; competences in integrating knowledge and skills as well as the ability to apply and develop new solutions of discrete event simulation in logistics.
Inhalt / content	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, alternative examination performances see examination regulation)
Medienformen / types of media	Seminar with black board and beamer presentation, experiments with a simulation framework
Literatur / reading list*	Bala, Bilash Kanti; Fatimah, Mohamend Arshad; Noh, Kusairi Mohd: System Dynamics: Modelling and

<p>* es werden immer die aktuellsten Auflagen verwendet und in den Vorlesungen empfohlen (latest editions will be used and recommended for the lectures)</p>	<p>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</p>
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Artikel 2

1. Diese Änderungssatzung tritt am Tag nach ihrer Veröffentlichung auf der Homepage der Hochschule Stralsund in Kraft.
2. Diese Änderungssatzung gilt erstmals für Studierende, die im Wintersemester 2019/2020 an der Hochschule Stralsund für den Master-Studiengang Simulation and System Design immatrikuliert wurden.

Ausgefertigt aufgrund des Beschlusses des Senats der Hochschule Stralsund vom 25. Juni 2019 und der Genehmigung der Rektorin vom 06. August 2019.

Stralsund, den 06. August 2019

**Die Rektorin
der Hochschule Stralsund
University of Applied Sciences
Prof.-Dr.-Ing. Petra Maier**

Veröffentlichungsvermerk:
Diese Satzung wurde am 07. August 2019 auf der Homepage der Hochschule Stralsund veröffentlicht.