# Faculty of Technology

| MECHANICAL ENGINEERING<br>(required language level B1)<br>BACHELOR LEVEL | Description | Lecturer | CP / ECTS | Term (Semester) |
|---|---|---|---|---|
| LECTURE: **Soft Skills** | Communicating and presenting basics of communication psychology, leading conversations and negotiations, leading teams and working groups (including motivations and tools, meeting management, creativity in teams, discussion situations, mastering appraisal interviews, leadership role, task and instruments, skills, learning and implementing conversation. | **Mr Schmidt** | **5** | **fall** |
| LECTURE: **Logistic & Supply Chain Management** | Knowledge of the role and activities of supply chain and logistics management as key elements for the successful management of companies; understanding the importance of customer thoughts in the entire chain; understanding of entire value-added networks, their planning and control techniques; understanding of the many instruments for analysis and problem solving in logistics chains. | **Mr Schleuter** | **5** | **fall** |
| LECTURE: **Int. Project Management** | Fundamentals of Project Management, Work Breakdown Structures, Project Scheduling and Budgeting, Earned Value Method, Risk Analysis in Projects, Project Organisations, Project Closure and Audit, PCSimulation | **Mr. Passenheim** | **5** | **fall** |
| SEMINAR: **Digital Marketing**<br>**Prerequisites:Sufficient knowledge of English and basic knowledge of marketing is required** | International marketing activities are explored; international market research, strategic issues, international marketing mix; additional aspects such as generic internationalization strategies, methods of evaluating and selecting countries as target markets, and market entry modes extend the scope of contents to entirely new fields; exercises and case studies are used to apply learned contents to real-life scenarios. | **Mr. Hummels** | **5** | **fall** |
| LECTURE: **Leadership and Communication** | Communicating and presenting, basics of communication psychology, goals, conducting conversations and negotiations, leading teams and work groups (including motivation and tools, meeting management, creativity in teams, conversation situations, employee discussions, managing conflicts), leadership role, tasks and - instruments, learning and implementing conversation and leadership skills.) | **Mr. Schmidt** | **5** | **fall** |
| LECTURE: **Organisation and Human Ressources** | course description will follow soon | **nn** | **5** | **fall** |

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| **TECHNICALL PROJECTS: e.g. Mechatronics and Robotics, Materials Engineering, Laser Technologies, Additive Manufacturing, Sustainability, etc.** | Subjects on Request, please choose one: Mechatronics and Robotics, Materials Engineering, Laser Technologies, Additive Manufacturing, Sustainability | **Esther Held and others** | **5** | **fall and spring** |
| LECTURE: **Control of and with Smart Products** | Students can choose and program microcontroller boards for products. Students can select and describe microcontroller boards and the necessary sensors and actuators. Students can describe and create programs for microcontroller boards. The module serves as an input for the semester project and provides a foundation for understanding smart products.<br>Content:<br>Assembly of a control system, Data flow in control systems, Hardware for control systems, Microcontroller boards, Sensors, Actuators, Programming of microcontrollers, Documentation of programs and hardware, Case studies. | **Mr. Wings** | **5** | **spring** |
| LECTURE: **Data Analysis and Machine Learning** | Data analysis and machine learning is an interdisciplinary field that combines the areas of computer science, mathematics and an application area. After this event, the students are able to set up a process for knowledge acquisition from data. The students understand how all three subfields are considered equally. The students know the essential components of data analysis and their tasks. They are familiar with the basic functions of the components. The students know the general structure of the components and can illustrate and apply the basic algorithms and methods. They know not only libraries, frameworks, modules and toolkits, but can use them specifically. As a result, they develop a deeper understanding of the relationships and learn how essential tools and algorithms of data analysis work in the core.<br>Content:<br>Basics of Linear Algebra; Statistics and Probability Theory; Algorithms from the field of Data Science; Models, e.g. k-Nearest Neighbors, Naive Bayes, Linear and Logistic Regression, Decision Trees, Neural Networks and Clustering. Methods of supervised, unsupervised and reinforced learning. Applications, e.g. from the field of Production Technology. | **Mr. Wings** | **5** | **spring** |

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| LECTURE: **Digital Business Models and After Sales** | Qualification objective<br>Within the framework of the module, students are able to develop digital and sustainable business models, by selecting a suitable business model pattern, structuring a business model with the Business Model Canvas framework and identifying the value for the customer with the Value Proposition Canvas framework, in order to align value creation sustainably with a business model.<br>Content:<br>Business models and digital business models: structure, characteristics, goals; Life cycle of business models; The Business Model Canvas and the Value Proposition Canvas; Business model innovations; Application of digital business models in the digital economy: zero-cost society, network effects, two-sidedness, platform economy; Digital transformation of after-sales. | **Mrs Blattmeier** | **5** | **spring** |
| LECTURE: **Product Management and Marketing** | Qualification objective<br>The module accompanies students in developing competences for the organization of product management. With the help of market analysis, students design a product portfolio, build a corresponding marketing concept, with which they integrate the products of the portfolio into the market based on digital technologies as an innovation, in order to meet the requirements of customers and see sustainability as a basic characteristic of a modern business model. The module is also an input for the semester project.<br>Content:<br>Goal setting of product management; Organizational forms for product management; Innovation management within the framework of product management; Brand and brand management, concept development of digital marketing. | **Mrs Blattmeier** | **5** | **spring** |

| **NEW: MECHANICAL ENGINEERING MASTER LEVEL** | **Description** | **Lecturer** | **CP / ECTS** | **Term (Semester)** |
|---|---|---|---|---|
| LECTURE: **Computational Simulation in Energy Engineering** | course description will follow soon | **Mr. Böcker** | **5** | **spring** |
| LECTURE: **Turbomachinery Design** | course description will follow soon | **Mr. Jakiel** | **5** | **spring** |
| LECTURE: **Structural Dynamics** | course description will follow soon | **Mr. Graf** | **5** | **spring** |
| LECTURE:**Thermodynamics of Real - World Processes** | course description will follow soon | **Mr. Böcker** | **5** | **spring** |
| LECTURE: **Laser Material Processing** | course description will follow soon | **Mr Schüning** | **5** | **spring** |
| LECTURE: **Scientific Working** | course description will follow soon | **Mrs Ottink** | **5** | **tbd** |
| LECTURE: **Power Plant Engineering** | course description will follow soon | **Mr. Jakiel** | **5** | **fall** |
| LECTURE: **ERP Systems I: Processes and Sustainability Data** | course description will follow soon | **Mrs Pechmann** | **5** | **fall** |
| LECTURE: **ERP Systems II: Integrated Business Processes and Data Analysis** | course description will follow soon | **Mrs. Pechmann** | **5** | **fall** |
| LECTURE: **Simulation of Production Systems** | course description will follow soon | **Mrs Pechmann** | **5** | **fall** |
| LECTURE: **Software Development** | course description will follow soon | **Mr. Wings** | **5** | **fall** |
| LECTURE: **Application of Nonlinear Finite-Element-Analysis** | course description will follow soon | **Mr. Graf** | **5** | **fall** |
| LECTURE: **Data Science** | course description will follow soon | **Mr. Wings** | **5** | **fall** |
| **TECHNICAL PROJECT: Wind Challenge** | course description will follow soon | **Mr. Herraez** | **5** | **fall and spring** |
| **TECHNICAL PROJECT: Hypleroop** | course description will follow soon | **Mr. Schüning** | **5** | **fall and spring** |