


<b>Studiengang:</b> <i>Program:</i>		<b>Bachelor of Science Maschinenbau</b> <i>Bachelor of Science in Mechanical Engineering</i>			
1	<b>Modul:</b> <i>Module:</i>	<b>Product Development / Engineering Design</b> <i>Produktentwicklung / Engineering Design</i>			<b>English</b> <i>Englisch</i>
		<b>Semester</b> <i>Semester</i>	<b>Dauer</b> <i>Duration</i>	<b>Status</b> <i>Status</i>	<b>Turnus</b> <i>Regular cycle</i>
		3. Semester	1 Semester	compulsory	annually
	<b>Kreditpunkte</b> <i>Credits</i>	<b>Aufwand</b> <i>Workload</i>	<b>Kontaktzeit</b> <i>Contact-hours</i>	<b>Selbststudium</b> <i>Student's efforts</i>	
4 ECTS	120hrs	3hrs/week = 45hrs Teaching 15hrs/week = 15hrs Project consultation	5hrs Preparation and post processing 55hrs Project work		
2	<b>Beschreibung</b> <i>Description</i>				
	<ul style="list-style-type: none"> <li>Design is very often understood to be only an intuitive process. Engineering design presents methods for much easier and even constant problem solving in engineering. The exercise is included and is based on reality-like assignments, which are worked out by the students in a team of 2-5 people themselves: Writing a requirements list - systematic search for solutions - writing down a concept in a specification booklet - drawing sketches of complete concepts of machines incl. technical documentation. The documentation is an important part, because legal background world-wide requires reasonable and good documentation. In the end a practical guide exists that can help to make life much easier in the job. Another challenging part is the social interaction in team-work that is necessary to successfully solve the problem, pass intermediate reviews and give a good final presentation at the end.</li> </ul>				
3	<b>Lernziele</b> <i>Learning Outcomes</i>				
	<ul style="list-style-type: none"> <li>Being able to arrange in a team environment, distributing work even</li> <li>Knowing problem-solving methods and their use</li> <li>Understanding and learning of the basic product development process</li> <li>Realizing problems, definition of a assignments</li> <li>Putting down requirements and specifications</li> <li>Assessing solutions and variants</li> <li>Sketches and drawings</li> <li>Building a simple physical model of the final concept to show scale and interdependencies</li> <li>Producing a technical file (documentation) with the necessary information – putting down information in abbreviated form but according to requirements of legislation and/or standards.</li> <li>Experiencing and training of team-work during the whole semester project</li> <li>Presenting project results in front of an audience</li> </ul>				
4	<b>Schlüsselqualifikationen</b> <i>Key qualifications</i>				
	Sozialkompetenz <i>Social Competence</i>	Methodenkompetenz <i>Competence in Methods</i>	Selbstkompetenz / Personenkompetenz <i>Self-Competence Personal Competence</i>	Interkulturelle Kompetenz <i>Intercultural Competence</i>	Medienkompetenz <i>Media-Competence</i>
	X	X	X	X	X
5	<b>Lehrveranstaltung/ -methoden</b> <i>Course type and methods</i>				
	<ul style="list-style-type: none"> <li>Seminar-like lecture</li> <li>Exercises and examples (case studies)</li> <li>Project</li> <li>Documentation/Technical File</li> </ul>				
6	<b>Vorbedingungen / Vorkenntnisse</b> <i>Prerequisites</i>				
	<ul style="list-style-type: none"> <li>Knowledge of Machine Component Design</li> <li>Understanding technical interdependency</li> </ul>				
7	<b>Arbeitsmittel / Literatur</b> <i>Required material / Literature</i>				
	<ul style="list-style-type: none"> <li>Drawing and designing equipment</li> <li>Literature according to the current list in the script</li> <li>No explicit course book required</li> </ul>				

<b>Detailinformationen</b>						
8	<b>Inhalte</b>					
	<i>Course topics</i> <b>Introduction</b> <ul style="list-style-type: none"> <li>The task of an engineer, systematic approach for design work</li> </ul> <b>Design as a process</b> <ul style="list-style-type: none"> <li>Planning period, the meaning and working out the requirements list and the specification booklet, finding functions, methods for searching solutions, evaluation methods</li> </ul> <b>Basic rules of embodiment design</b> <ul style="list-style-type: none"> <li>Simple, clear, worst case &amp; backup, principle of force transmission, principle of deformation, principle of self-help, integral- und differential design, inverted function, cause &amp; effect, ...</li> </ul> <b>Boundary conditions of design work in the company</b> <ul style="list-style-type: none"> <li>Safety and regulation – EU Machinery Directive – product liability – design to safety, rules for safety</li> </ul> <b>Economic aspects of design</b> <ul style="list-style-type: none"> <li>Influence on costs, costing in the design process, target costing, decision based on cost, methods/help for cost-effective design ...</li> </ul> <b>Environmental aspects of design</b> <ul style="list-style-type: none"> <li>Idea, recycling processes, design rules for environmental friendly machines</li> </ul>					
9	<b>Prüfungsform</b>					
	<i>Assessment</i> <ul style="list-style-type: none"> <li>Prüfungsvorleistung/Prerequisites: none</li> <li>Fachprüfung/Exam: Written project documentation (Technical File)</li> </ul>					
10	<b>Voraussetzung für die Vergabe von Kreditpunkten</b>					
<i>Requirements for granting of credits</i> Passing the required parts of line 9 "Assessment"						
11	<b>Weiterführende Veranstaltungen</b>					
<i>Related courses</i> <ul style="list-style-type: none"> <li>Design Project at MSOE</li> </ul>						
12	<b>Zuordnung</b>					
	<i>Classification</i>					
	Mathematik & Naturwissenschaft <i>Mathematics &amp; Natural Sciences</i>	Ingenieurwissenschaften <i>Engineering Science</i>	Ingenieur-anwendungen <i>Engineering Application</i>	Entwicklung & Konstruktion <i>Design</i>	Werkstoffe <i>Material</i>	Wirtschaft, Management, Sprachen <i>General Education</i>
(X)	X	X	X	(X)	(X)	
13	<b>Modulbeauftragter / Lehrpersonen</b>					
	<i>Responsible person / Lecturers</i> Prof. Dr.-Ing. J. Blechschmidt/ Prof. Dr.-Ing. J. Blechschmidt					