


Studiengang: Master of Science Maschinenbau Program: <i>Master of Science in Mechanical Engineering</i>				
1	Modul: Planning of Technological Investments and Simulation Module: <i>Technische Investitionsplanung und Simulation</i>	English <i>Englisch</i>		
	Fach-Nr. <i>Course number</i>	Semester <i>Semester</i>	Dauer <i>Duration</i>	Status <i>Status</i>
		2. Semester	1 Semester	elective
	Kreditpunkte <i>Credits</i>	Aufwand <i>Workload</i>	Kontaktzeit <i>Contact-hours</i>	Selbststudium <i>Student's efforts</i>
	5 ECTS	150hrs	4hrs/week = 60hrs Lecture	15hrs Preparation and post processing 75hrs Self-study
2	Beschreibung <i>Description</i> The course aims to transfer the basics and actually used tools to plan technological investments, to use simulation methodologies and to evaluate the economic impact of the investment. This will enable the students to make good investment decisions into technological assets. This includes the usage of a simulation tool for plant as well as shop floor layouts.			
3	Lernziele <i>Learning Outcomes</i> The targets are: <ul style="list-style-type: none"> • Planning of technological investments, i.e. plants, shop floors and their equipment for production industries • Training of production specific issues and their methodologies for a qualified investment decision process based on case studies • Layout, simulation and optimization of plants and their production processes by using a dynamic software application tool within an investment project 			
4	Schlüsselqualifikationen <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>
		X		X
5	Lehrveranstaltung/ -methoden <i>Course type and methods</i> Lecture <ul style="list-style-type: none"> • Seminar-like teaching • Exercises and examples (case studies) 			
6	Vorbedingungen / Vorkenntnisse <i>Prerequisites</i> Recommended: Knowledge about company organisation, production technologies and business administration and accounting.			
7	Arbeitsmittel / Literatur <i>Required material / Literature</i> Literature <ul style="list-style-type: none"> • Aggteleky, B. : Fabrikplanung - Werksentwicklung und Betriebsrationalisierung, Band 1: Grundlagen, Zielplanung, Vorarbeiten, München: Hanser, 1998. • Aggteleky, B. : Fabrikplanung - Werksentwicklung und Betriebsrationalisierung, Band 2: Betriebsanalyse, Feasibility- Studie, München: Hanser, 2001. • Aggteleky, B. : Fabrikplanung - Werksentwicklung und Betriebsrationalisierung, Band 3: Ausführungsplanung und Projektmanagement, München: Hanser, 1990. • Däumler, F. : Anwendung von Investitionsrechnungsverfahren in der Praxis, Herne/Berlin: Verlag NWB, 2010. • Pawellek, G., Ganzheitliche Fabrikplanung: Grundlagen, Vorgehensweise, VDI-Buch, Springer Verlag, Berlin, 2014. • Wiendahl, H.-P., Planung modularer Fabriken: Vorgehen und Beispiele aus der Praxis, Hanser Verlag, 2013. • Ziegenbein, K. : Controlling, Ludwigshafen: Kiehl-Verlag, 2012. 			

Detailinformationen																				
8	Inhalte <i>Course topics</i> Planning of technological investments and simulation Fundamentals in planning of investments <ul style="list-style-type: none"> ➤ General definitions ➤ Process activities ➤ Process organization One-dimensional decision tools <ul style="list-style-type: none"> ➤ Static methodologies ➤ Dynamic methodologies Multi-dimensional decision tools <ul style="list-style-type: none"> ➤ Qualitative ranking methodologies ➤ Risk and sensitivity analysis Case studies: Investition decisions for ... <ul style="list-style-type: none"> ➤ new technologies ➤ software applications Introduction in planning of technological systems and their simulation <ul style="list-style-type: none"> ➤ General definitions ➤ Process activities ➤ Process organisation Specification of the planning process <ul style="list-style-type: none"> ➤ Target planning ➤ Resource planning ➤ Implementation planning Introduction in the simulation software FLEXSIM <ul style="list-style-type: none"> ➤ Case study Case studies: <ul style="list-style-type: none"> ➤ Functional driven production ➤ Process driven production ➤ Automation driven production ➤ Strategies for proces optimisation 																			
9	Prüfungsform <i>Assessment</i> Written examination at the end of the term: 2 hours.																			
10	Voraussetzung für die Vergabe von Kreditpunkten <i>Requirements for granting of credits</i> <ul style="list-style-type: none"> • Successful passing of exam 																			
11	Weiterführende Veranstaltungen <i>Related courses</i> <ul style="list-style-type: none"> • none 																			
12	Zuordnung <i>Classification</i> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="font-size: small;">Mathematik & Naturwissenschaft <i>Mathematics & Natural Sciences</i></th> <th style="font-size: small;">Ingenieur- wissenschaften <i>Engineering Science</i></th> <th style="font-size: small;">Ingenieur- anwendungen <i>Engineering Application</i></th> <th style="font-size: small;">Entwicklung & Konstruktion <i>Design</i></th> <th style="font-size: small;">Werkstoffe <i>Material</i></th> <th style="font-size: small;">Wirtschaft, Management, Sprachen <i>General Education</i></th> <th style="font-size: small;">Anderes <i>Other</i></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td>X</td> <td>X</td> </tr> </tbody> </table>						Mathematik & Naturwissenschaft <i>Mathematics & Natural Sciences</i>	Ingenieur- wissenschaften <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>	Anderes <i>Other</i>			X			X	X
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		X			X	X														
13	Modulbeauftragter / Lehrpersonen <i>Responsible person / Lecturers</i> Prof. Dr. R. Cremer/ Prof. Dr. R. Cremer																			