

## Module: Planning of Technological Investments and Simulation

<b>Level</b>	Bachelor	<b>Short Name</b>	PTIS
<b>Responsible Lecturers</b>	Cremer, Ralf, Prof. Dr. Ing. Dipl.-Wirt. Ing.		
<b>Department, Facility</b>	Mechanical Engineering and Business Administration		
<b>Course of Studies</b>	Business Administration and Engineering, Bachelor		
<b>Compulsory/elective</b>	Compulsory	<b>ECTS Credit Points</b>	5
<b>Semester of Studies</b>	5	<b>Semester Hours per Week</b>	4
<b>Length (semesters)</b>	1	<b>Workload (hours)</b>	150
<b>Frequency</b>	WiSe	<b>Presence Hours</b>	45
<b>Teaching Language</b>	English	<b>Self-Study Hours</b>	105

The following section is filled only if there is **exactly one** module-concluding exam.

<b>Exam Type</b>	Written Exam	<b>Exam Language</b>	English
<b>Exam Length (minutes)</b>	90	<b>Exam Grading System</b>	One-third Grades
<b>Learning Outcomes</b>	<p>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. The targets are:</p> <ul style="list-style-type: none"> <li>• Students are able to plan technological investments, i.e. plants, shop floors and their equipment for production industries.</li> <li>• Students can apply production specific issues and their methodologies for a qualified investment decision process based on business cases.</li> </ul> <p>Students can work with an IT-based simulation tool for shop floor planning. They will simulate and optimize plants and their production processes by using this dynamic software application tool</p>		
<b>Participation Prerequisites</b>	<ul style="list-style-type: none"> <li>• General business administration for companies</li> <li>• Accounting</li> <li>• Investment theory and their quantitative methods</li> <li>• Production technologies</li> </ul>		

The previous section is filled only if there is **exactly one** module-concluding exam.

<b>Consideration of Gender and Diversity Issues</b>	<ul style="list-style-type: none"> <li>✓ Use of gender-neutral language (THL standard)</li> <li>✓ Target group specific adjustment of didactic methods</li> <li>✓ Making subject diversity visible (female researchers, cultures etc.)</li> </ul>
<b>Applicability</b>	
<b>Remarks</b>	

## Module Course: Planning of Technological Investments and Simulation

(of Module: Planning of Technological Investments and Simulation)

<b>Course Type</b>	Lecture	<b>Form of Learning</b>	Presence
<b>Mandatory Attendance</b>	yes	<b>ECTS Credit Points</b>	5
<b>Participation Limit</b>		<b>Semester Hours per Week</b>	4
<b>Group Size</b>		<b>Workload (hours)</b>	150
<b>Teaching Language</b>		<b>Presence Hours</b>	45
<b>Study Achievements ("Studienleistung", SL)</b>		<b>Self-Study Hours</b>	105
<b>SL Length (minutes)</b>		<b>SL Grading System</b>	

The following section is filled only if there is a course-specific exam.

<b>Exam Type</b>		<b>Exam Language</b>	
<b>Exam Length (minutes)</b>		<b>Exam Grading System</b>	
<b>Learning Outcomes</b>			
<b>Participation Prerequisites</b>			

The previous section is filled only if there is a course-specific exam.

<b>Contents</b>	<p><b>Fundamentals in planning of technological investments</b></p> <ul style="list-style-type: none"> <li>• One-dimensional decision tools <ul style="list-style-type: none"> <li>• Static methodologies</li> <li>• Dynamic methodologies</li> </ul> </li> <li>• Multi-dimensional decision tools <ul style="list-style-type: none"> <li>• Qualitative ranking methodologies</li> <li>• Risk and sensitivity analysis</li> </ul> </li> </ul> <p><b>Introduction in planning of technological systems and their simulation</b></p> <ul style="list-style-type: none"> <li>• Specification of the planning process <ul style="list-style-type: none"> <li>• Target planning</li> <li>• Resource planning</li> <li>• Implementation planning</li> </ul> </li> <li>• Plant simulation software FLEXSIM <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Case studies</li> </ul> </li> </ul>
<b>Literature</b>	Aggteleky, B., Fabrikplanung - Werkentwicklung und Betriebsrationalisierung, Band 1: Grundlagen, Zielplanung, Vorarbeiten, Carl Hanser Verlag, München, Wien, 1998.

Aggteleky, B., Fabrikplanung - Werksentwicklung und Betriebsrationalisierung, Band 2: Betriebsanalyse, Feasibility- Studie, Carl Hanser Verlag, München, Wien, 2001.

Aggteleky, B., Fabrikplanung - Werksentwicklung und Betriebsrationalisierung, Band 3: Ausführungsplanung und Projektmanagement, Carl Hanser Verlag, München, Wien, 1990.

Däumler, F., Anwendung von Investitionsrechnungsverfahren in der Praxis, Verlag NWB, Herne/Berlin, 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, F. Kiehl Verlag, Ludwigshafen, 2012

<b>Remarks</b>	
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