

# Full Curriculum Computer Aided Conception and Production in Mechanical Engineering

## Emphasis „Conception of Machines“:

S U B J E C T	WS			SS			WS			SS			ECTS credits	SWS
	L	E	P	L	E	P	L	E	P	L	E	P		
<b>COMPULSORY COURSES</b>														
Continuum Mechanics				2	2								5	4
Computational Fluid Mechanics I & II				2	1		1	1					7	5
Advanced Software Engineering							2	2					5	4
Introduction to Simulation Techniques				2	1	1							5	4
Simulation of Discrete Event Systems							2	2					5	4
Foundations of Numerical Methods in Mechanical Engineering	2												3	2
Foundations of Finite Element Methods	2	2											5	4
Finite Element Methods in Lightweight Design				2	1								5	3
Nonlinear Structural Mechanics				2	1								5	3
Failure of Structures and Structural Elements				2									4	2
Systematic Engineering Design I <i>und</i> Practical Applications of Computer-Aided Engineering Tools	2	2	1										7	5
Virtual Machine Tool – Modelling and Simulation							2	2					5	4
<b>Total Compulsory Courses</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>12</b>	<b>6</b>	<b>1</b>	<b>7</b>	<b>7</b>					<b>61</b>	<b>44</b>
<b>ELECTIVE COURSES</b>														
Tensor Algebra and Tensor Analysis for Engineering Students I	2	2											5	4
Tensor Algebra and Tensor Analysis for Engineering Students II				2	2								5	4
Fundamentals of Light Weight Design	2	1											4	3
Structural Design of Vehicles				2	1								4	3
Theory of Vibrations				2	2								5	4
Simulation and Control of Production Systems	2	2											5	4
Practical Introduction to FEM-Software I	1		2										3	3
Practical Introduction to FEM-Software II				1		2							3	3
Systematic Engineering Design II				2	2								5	4
Structural Integrity of High Temperature Components in Energy Systems – Materials, Properties and Corrosion, Modelling of the Mechanical Behaviour	2			2									5	4
Micro- and Macrosimulation of Casting Processes	2	1											4	3
Welding Technology I				2	2								5	4
Modeling, Model Reduction and Simulation in Laser Processing I				2	2								5	4
Modeling, Model Reduction and Simulation in Laser Processing II				2	2								5	4
Combustion I	3	1											5	4
<b>Total Elective Courses</b>			<b>8</b>			<b>4</b>							<b>15</b>	<b>12</b>
<b>GERMAN Language Course</b>	<b>2</b>	<b>2</b>											<b>6</b>	<b>4</b>

Total Non Technical Subject		4								6	4
INDUSTRIAL INTERNSHIP								9		9	
MINI THESIS						9				9	
MASTER THESIS								20		20	
TOTAL		31			33			27		29	60

Emphasis "Production":

S U B J E C T	WS			SS			WS			SS			ECTS credits	SWS
	L	E	P	L	E	P	L	E	P	L	E	P		
<b>COMPULSORY COURSES</b>														
Continuum Mechanics				2	2								5	4
Computational Fluid Mechanics I & II				2	1		1	1					7	5
Advanced Software Engineering							2	2					5	4
Introduction to Simulation Techniques				2	1	1							5	4
Simulation of Discrete Event Systems							2	2					5	4
Foundations of Numerical Methods in Mechanical Engineering	2												3	2
Foundations of Finite Element Methods	2	2											5	4
Simulation and Control of Production Systems							2	2					5	4
Modelling and Simulation in Manufacturing Technology							2	1					4	3
Automatic Control	3	2											7	5
Quality Management	2	2											5	4
Production Management							2	2					5	4
<b>Total Compulsory Courses</b>	<b>9</b>	<b>6</b>		<b>6</b>	<b>4</b>	<b>1</b>	<b>11</b>	<b>10</b>					<b>61</b>	<b>47</b>
<b>ELECTIVE COURSES</b>														
Practical Introduction to FEM-Software I	1		2										3	3
Practical Introduction to FEM-Software II				1		2							3	3
Systematic Engineering Design I	2	2											5	4
Systematic Engineering Design II				2	2								5	4
Machine Tools I	2	2											5	4
Machine Tools II				2	2								5	4
Virtual Machine Tool – Modelling and Simulation	2	2											5	4
Manufacturing Technology I	2	2											5	4
Manufacturing Technology II				2	2								5	4
Production Metrology				2	2								5	4
Industrial Engineering, Ergonomics and Work Organisation	2	2											5	4
Micro- and Macrosimulation of Casting Processes	2	1											4	3
Welding Technology I				2	2								5	4
Modeling, Model Reduction and Simulation in Laser Processing I				2	2								5,0	4
Modeling, Model Reduction and Simulation in Laser Processing II				2	2								5,0	4
Combustion I	3	1											5	4
<b>Total Elective Courses</b>			<b>4</b>			<b>4</b>			<b>4</b>				<b>15</b>	<b>12</b>
<b>GERMAN Language Course</b>	<b>2</b>	<b>2</b>											<b>6</b>	<b>4</b>
<b>Total Non Technical Subject</b>			<b>4</b>										<b>6</b>	<b>4</b>
<b>INDUSTRIAL INTERNSHIP</b>												<b>9</b>	<b>9</b>	
<b>MINI THESIS</b>						<b>9</b>							<b>9</b>	
<b>MASTER THESIS</b>												<b>20</b>	<b>20</b>	
<b>TOTAL</b>			<b>31</b>			<b>28</b>			<b>32</b>			<b>29</b>	<b>120</b>	<b>63</b>

