

INTERNATIONAL STUDENT PROGRAMMES

of the *RWTH INTERNATIONAL ACADEMY at the RWTH AACHEN UNIVERSITY*

M.Sc. Computer Aided Conception and Production in Mechanical Engineering

Study branch: Conception of Machines

Students have to choose one out of two different tracks, either 'Conception of Machines' or 'Production of Machines'. Both tracks are built upon common core courses and allow students further on to specialize in their field of research in more depth.

Orange highlighted courses are taught only in the study track Conception of Machines. The other courses are part of both curricula.

Students can decide which track to study already in the first semester.

Module	CP	WS			SS			WS			SS			SWS
		L	E	P	L	E	P	L	E	P	L	E	P	
Compulsory Courses														
Numerical Methods in Mechanical Engineering	7	3		2										5
Finite Element Methods for Engineers	5	2	2											4
Advanced Software Engineering	5	2	2											4
Continuum Mechanics	5				2	2								4
Multibody Dynamics	5				2	2								4
Nonlinear Structural Mechanics	5				2	2								4
Failure of Structures and Structural Elements	5				2	1								3
Computational Fluid Dynamics I & II*	7				2	1		1	1					5
Simulation of Discrete Event Systems	5							2	2					4
Machine Design Process and Practical Applications of Computer-Aided Engineering Tools	7							2	2	1				5
Total Compulsory Courses	56	17			24			15						
Elective Courses - 20 CP to be taken**														
Micro- and Macrosimulation of Casting Processes	4	2	1											3
Practical Introduction to FEM-Software I	3	1		2										3
Mechatronics and Control Techniques for Production Plants	5	2	2											4
Fundamentals of Light Weight Design	4	2	1											3
Tensor Algebra and Tensor Analysis for Engineering Students I	5	2	2											4
Tensor Algebra and Tensor Analysis for Engineering Students II	5				2	2								4
Finite Element Methods in Lightweight Design	5				2	1								3
Welding and Joining Technologies	5				2	2								4
Practical Introduction to FEM-Software II	3				1		2							3
Modeling, Model Reduction and Simulation in Laser Processing I	5				2	2								4
Modeling, Model Reduction and Simulation in Laser Processing II	5							2	2					4
Selected Topics of Inelasticity Theory	6							2	2					4
Total Elective Courses	20													
German Language Course	6	2	2											4
Industrial Internship	9											9 weeks		
Mini Thesis	9							260 h						
Master Thesis	20											4 months		
Total	120													

CP = Credit Points
 SS = Summer Semester
 WS = Winter Semester
 L = Lecture
 E = Exercise
 P = Practical Session
 SWS = Weekly Semester Hours (Semesterwochenstunden)

Orange highlighted: Specialisation courses for the track: Conception of Machines

*The credits are divided into 4CP+3CP

**Recommendation for elective courses (20 CP total):

1. Sem. max. 7 CP
2. Sem. max. 8 CP
3. Sem. max. 5 CP

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Students can decide which track to study already in the first semester.

Module	CP	WS			SS			WS			SS			SWS
		L	E	P	L	E	P	L	E	P	L	E	P	
Compulsory Courses														
Finite Element Methods for Engineers	5	2	2											4
Numerical Methods in Mechanical Engineering	7	3		2										5
Advanced Software Engineering	5	2	2											4
Continuum Mechanics	5				2	2								4
Multibody Dynamics	5				2	2								4
Computational Fluid Dynamics I & II*	7				2	1		1	1					5
Simulation of Discrete Event Systems	5							2	2					4
Quality Management	5							2	2					4
Modelling and Simulation in Manufacturing Technology	5							2	1					3
Production Management A	5							2	2					4
Total Compulsory Courses	54	17			14			23						
Elective Courses - 22 CP are to be taken														
Mechatronics and Control Techniques for Production Plants	5	2	2											4
Micro- and Macrosimulation of Casting Processes	4	2	1											3
Practical Introduction to FEM-Software I	3	1		2										3
Control Engineering	2	1	1											2
Machine Tools	5	2	2											4
Manufacturing Technology I	5	2	2											4
Industrial Engineering and Ergonomics	5	2	2											4
Manufacturing Technology II	5				2	2								4
Production Metrology	5				2	2								4
Computational Modeling of Membranes and Shells	5				2	1								3
Welding and Joining Technologies	5				2	2								4
Finite Element Methods in Lightweight Design	5				2	1								3
Practical Introduction to FEM-Software II	3				1		2							3
Modeling, Model Reduction and Simulation in Laser Processing I	5				2	2								4
Modeling, Model Reduction and Simulation in Laser Processing II	5							2	2					4
Selected Topics of Inelasticity Theory	6							2	2					4
Total Elective Courses	22													
German Language Course	6	2	2											4
Industrial Internship	9											9 weeks		
Mini Thesis	9							260 h						
Master Thesis	20											4 months		
Total	120													

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 SWS = Weekly Semester Hours (Semesterwochenstunden)

Blue highlighted: Specialisation courses for the track: Production of Machines

*The credits are divided into 4CP+3CP
 **Recommendation for elective courses (22 CP total):
 1. Sem. max. 7 CP
 2. Sem. max. 15 CP