

**INTERNATIONAL
ACADEMY**

**RWTHAACHEN
UNIVERSITY**

MASTER IN MECHANICAL ENGINEERING

M. Sc. Computer Aided Mechanical Engineering

M. Sc. Production Systems Engineering

M. Sc. Textile Engineering



**ENGINEERING
SUCCESS**



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RWTH AACHEN UNIVERSITY

Thinking the Future

ABOUT US

It is our pleasure to inform you about our international master's degree programmes. We would be glad to welcome you at the RWTH Aachen University (RWTH), one of Germany's best universities in mechanical engineering, located in the heart of Europe.

As official academy for executive and international education attached to the RWTH Aachen University, the RWTH International Academy cooperates closely with various institutes of the university to offer study programmes particularly designed for an international target group.

EXCELLENT SCIENCE AND RESEARCH

While the RWTH International Academy is in charge of the administration and student support services, the scientific responsibility of the programmes is held by the RWTH Aachen University's institutes – leading to the official M.Sc. degree awarded by the RWTH Aachen University itself. We present the following programmes in mechanical engineering in this brochure:

- M. Sc. Computer Aided Conception and Production in Mechanical Engineering
- M. Sc. Production Systems Engineering
- M. Sc. Textile Engineering

INTERNATIONAL REPUTATION

The RWTH Aachen University is one of the largest and most renowned universities of technology in Germany which offers top level study and research opportunities. Numerous partnerships between the RWTH Aachen University and international universities as well as industrial companies offer excellent professional and personal perspectives for students and graduates.

RANKINGS

The RWTH Aachen University secures top places among the best universities in mechanical engineering and sciences in renowned surveys. Here are some examples:

- 'Wirtschafts Woche': RWTH is ranked as the leader in all technical disciplines (2013)
- QS Ranking: RWTH is rated as the best university for mechanical engineering in Germany and the second best one in continental Europe (2013)
- Times Higher Education Magazine World Reputation Ranking: RWTH is listed for the first time as one of "the top 100 most powerful global university brands" (2014)

WELCOME TO AACHEN

Experience a vibrant student town in the heart of Europe

RWTH AACHEN UNIVERSITY

40,375 Students
(16 % Internationals)
4,745 Academic Staff
512 Professors
260 Institutes
120 Nationalities
9 Faculties

AACHEN

260,000 Inhabitants
Travel Distances:
London 455 km, Paris 426 km,
Amsterdam 227 km

Aachen welcomes international students with its unique atmosphere of sciences, the arts, an international flair and 5,000 years of history.

Aachen is located right at the "Border Triangle", where the borders of Belgium, the Netherlands, and Germany meet. The attraction of living in this area includes a colorful mix of languages and people as well as short travel distances to cities such as Amsterdam, Brussels, Paris or London.

In Aachen's historic centre around the distinctive cathedral, which is a UNESCO world heritage site, one can literally touch European history. The great number of students makes student life in Aachen vibrant and unique.

WELCOME

IN THE HEART OF EUROPE

VIBRANT STUDENT LIFE IN A HISTORIC CITY

Many international student clubs and associations have been founded by foreign students and researchers. They contribute with many cultural events to an intercultural exchange in Aachen's community and also support new arrivals to settle in.

"Perfectly located along Germany's borders with Belgium and the Netherlands, one of the best technical universities in Europe and having the title of "Excellence" as a university... These are only the most conspicuous reasons why you should study in Aachen at RWTH. You can never imagine what these exceptional features bring to your career before you start with your studies at RWTH Aachen University. I am sure that you will enjoy both studying at RWTH and living in the lovely city Aachen."

Eren Sahin from Turkey
M.Sc. Student at RWTH Aachen University

„ENJOY BOTH: STUDYING AT RWTH & LIVING IN THE LOVELY CITY AACHEN“



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COMPUTER AIDED MECHANICAL ENG.

Master of Science RWTH Aachen University (M. Sc. RWTH)

OVERVIEW Good skills in computer-aided methods are of growing importance for every engineer in all fields of activity. This is taken into account in modern teaching of all leading institutions of higher education all around the world. In contrast to other programmes, the RWTH Aachen University master's degree programme Computer Aided Conception and Production in Mechanical Engineering (CAME) addresses specifically the purposes of the practicing mechanical engineer.

PROGRAMME STRUCTURE CAME students have to complete course work (elective and core courses) in a common basis as well as in their field of focus: They have to decide either between conception or production of machines.

- **Conception of Machines** prepares students to develop and apply modern computer-aided methods focused on the construction and dimensioning of structures and mechanical engineering systems according to functional requirements.
- **Production of Machines** prepares students to develop and use computer-aided systems in modern industrial production, which includes manufacturing, production systems, planning, and management.

All students have to complete further modules, such as a German course, a mini thesis, an internship and a master thesis.

GRADUATE PROFILE Master graduates will be qualified to work in different areas of industry, in research institutes or as engineering consultants. With their broad knowledge they are especially prepared to perform interdisciplinary work. In granting the RWTH master degree, the graduates receive a degree that is recognised world-wide and qualifies for further PhD studies.

- KEY FACTS**
- English taught
 - 2 year programme (4 semesters)
 - 120 credit points
 - Start: every year in October
 - Application deadline: every year 1 March
 - See: www.master-mechanical-engineering.com for more information

	German Language Course	
CORE COURSES	Numerical Methods in Mech. Eng., Finite Element Methods for Eng., Continuum Mechanics, Multi-body Dynamics, Computational Fluid Dynamics, Advanced Software Engineering, Simulation of Discrete Event Systems	
ELECTIVE COURSES	Micro- and Macrosimulation of Casting Processes, Practical Introduction to FEM Software, Welding and Joining Technologies, Modelling, Model Reduction and Simulation in Lasers Processing, Mechatronics and Control Techniques for Production Plants	
FURTHER	Industrial Internship, Mini-Thesis, Master Thesis	
STUDENTS CHOOSE TO FOCUS EITHER ON PRODUCTION OR CONCEPTION		
	PRODUCTION OF MACHINES	CONCEPTION OF MACHINES
	CORE COURSES: Quality Management, Modelling and Simulation in Manufacturing Technology, Production Management	CORE COURSES: Nonlinear Structural Mechanics, Failure of Structures and Structural Elements, Machine Design Process and Practical Applications of Computer Aided Eng. Tools
	ELECTIVE COURSES: Control Engineering, Manufacturing Technology, Industrial Engineering, Production Metrology, Machine Tools	ELECTIVE COURSES: Fundamentals of Lightweight Design, Tensor Algebra and Analysis

PRODUCTION SYSTEMS ENGINEERING

Master of Science RWTH Aachen University (M. Sc. RWTH)

The programme Master of Science in Production Systems Engineering builds upon the existing qualifications of the students and facilitates a deepening of the knowledge in the fields of materials, manufacturing processes, process and product engineering, manufacturing system design, manufacturing competitiveness and management. Skills such as leading and functioning within project teams and being able to communicate effectively will be strengthened. By extensive laboratory experience, the graduate will be able to carry out fundamental or applied research, to identify vital work steps and to communicate the results of such research.

Production Systems Engineering students have to complete compulsory and elective courses as part of their course work. The subjects cover the fundamentals of Production Systems Engineering, Quality Management and Metrology, Manufacturing Technology and Machine Tools. Students can choose from a catalogue of elective courses the ones which meet their individual objectives and interests.

In addition to the course work, students must also complete the following modules as part of their master programme:

- Complementary German course (to be completed with the DSM examination)
- A master thesis

Product engineers work in a multitude of areas within industry and research departments, including development, design, sales and distribution, quality management and organisation. The master's degree awarded by the RWTH qualifies graduates also for PhD studies.

- KEY FACTS**
- English taught
 - 1,5 year programme (3 semesters)
 - 90 credit points
 - Start: every year in October
 - Application deadline: every year 1 March
 - See: www.master-mechanical-engineering.com for more information

CORE COURSES	Manufacturing Technology, Production Management, Welding and Joining Technologies, Gear and Transmission Technology, Mechatronics and Control Techniques for Production Plants
35 CP	
ELECTIVE COURSES	Industrial Logistics, Multi Body Dynamics, Factory Planning, Process Chains for Application of Complex Optical Components, Modelling, Model Reduction and Simulation in Laser Processing, Production Metrology, Control Engineering, Advanced Software Engineering, Machine Design Process, Tribology
19 CP	
4-5 COURSES	
FURTHER MODULES	German Language Course Master Thesis

OVERVIEW

PROGRAMME STRUCTURE

GRADUATE PROFILE

KEY FACTS

TEXTILE ENGINEERING

Master of Science RWTH Aachen University (M. Sc. RWTH)

OVERVIEW Germany is worldwide the primary location in researching and developing new technologies in mechanical engineering industries and textile production. It is also one of the biggest producers of technical textiles. After successfully completing the master's programme in textile engineering at the RWTH, graduates will work in the field of constructing textile machinery as well as developing processes and operations for the production of textiles of any kind.

PROGRAMME STRUCTURE The Master of Science in Textile Engineering has got an interdisciplinary structure and encompasses two modes of study: One practically oriented option "by coursework" and one research-oriented option "by research". The "coursework" option focuses on practical and applied textile engineering. The "research" option is a research intensive specialization in textile engineering. Students have to choose between one or the other option.

Master students will learn how to:

- Design machines
- Develop new products, new processes and new machines
- Improve existing textile products, processes and machines
- Simulate textile products, processes and machines

GRADUATE PROFILE Successful participants receive a Master of Science degree (M.Sc.) awarded by the RWTH Aachen University. With this degree, graduates become part of the German textile research community at one of the top universities for engineering in the world and can apply after the graduation directly for a leading position in the industry. In addition, students with outstanding academic performance shall be inspired to pursue an ongoing academic career at the RWTH Aachen University.

- KEY FACTS**
- English and German taught
 - 1,5 year programme (3 semesters)
 - 90 credit points
 - Start: every year in October
 - Application deadline: every year 1 March
 - See: www.master-mechanical-engineering.com for more information

ORGANISATION

www.master-mechanical-engineering.com

Please visit our website for more programme details and organizational information:

- www.master-mechanical-engineering.com
- contact@master-mechanical-engineering.com

- Apply online via: www.rwth-aachen.de/ioam.
- The application deadline is 1 March of each year!

Specific requirements are detailed on the programme websites. In general, all applicants have to complete a bachelor in mechanical engineering (B. E., B. Sc.) or a related field. One year of practical work experience is generally requested. Additionally, proficiency in the English language has to be certified.

The RWTH Aachen University and the RWTH International Academy offer a limited number of scholarships - some are covering the entire tuition fees, others contribute a small amount to cover the living expenses. International students can search in several databases for support:

- www.daad.de
- www.rwth-aachen.de
- www.master-mechanical-engineering.com

Generally, students enrolled at the RWTH Aachen University have the opportunity to find a job on campus and work up to a max. of 19 hours a week. This opportunity also allows students to carry out research at the university institutes on a closer level than within normal lectures.

All master programmes are accredited by ASIIN e.V. This accreditation is updated in regular timeframes of five years to ensure a continuous level of quality.

Summer Schools at RWTH Aachen University offer a perfect mix of technical study and cultural experience. Three technical courses and one German language course provide international students the opportunity to take part in excellent science and research at the RWTH Aachen University. Prospective master students can attend the summer schools in order to get to know the university beforehand.

- Please visit: www.summerschool-in-germany.com for more information

CONTACT US

APPLICATION

REQUIREMENTS

FINANCES & SCHOLARSHIPS

WORKING ON CAMPUS

ACCREDITATION

SUMMER SCHOOLS



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RWTH International Academy gGmbH
RWTH Aachen University
Kackertstr. 9, 52072 Aachen
Germany
Phone: +49 (0) 241 80-96655

Contact@master-mechanical-engineering.com
www.master-mechanical-engineering.com
www.facebook.com/RWTH.Academy.Master.Mechanical.Engineering

