

Master of Science (M.Sc.) in Production Systems Engineering

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

- materials and manufacturing processes,
- process and product engineering,
- management and manufacturing system design,
- manufacturing competitiveness.

In addition, the skill of leading and functioning on project teams while being able to communicate effectively, will be strengthened. Through extensive laboratory experience, the graduate will be able to undertake fundamental and applied research while being able to identify and communicate the results of the research.

This programme focuses on all disciplines within Production Engineering, including

- Automatic Control,
- Fabrication Processes,
- Manufacturing Technology,
- Machine Tools,
- Production Management,
- Quality Management,
- Industrial Engineering,
- Ergonomics and Work Organisation.

RWTH is worldwide well renowned for its continuous and innovated research in all areas of engineering, which ensures that the Production Engineering curriculum is always up-to-date and maintained to the highest level.

Career Opportunities

Product engineers work in a multitude of areas within industry or research departments, including development, design, sales and distribution, quality management and organisation. This M.Sc. is an internationally accepted degree and enables someone to work throughout the world.

Graduates will be qualified to work in a multitude of different areas of industry, including research and development, design, manufacturing and production. In granting the RWTH Master Degree, the programme gives the graduate a degree that is recognised world-wide and qualifies for further PhD studies.

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Preface

The demand for higher productivity is as old as manufacturing itself, regardless of the level and the methods of production. Higher productivity is mainly realised by continuous, incremental improvement.

Fundamental innovations are less common. Hard machining, high speed cutting (HSC) and dry machining are some examples of manufacturing technologies which have undergone both fundamental and incremental development of a significant nature in recent years. Underlying such developments have been innovations in elements of the total manufacturing system encompassing process knowledge, tooling and production machinery. Vision, enthusiasm, diligence and the commitment of people in basic and applied research, in product development and in manufacturing are the main requirements for success in the industrial environment.

The structure of our master programme is designed to excite and equip our students for future demands on an employee and scientist. Our lecturers, having a high level scientific and industrial background, attach special importance to the education of qualified engineers. Our goal is to educate a trained personnel that develops the ability to act independently and application oriented.

Our hope is that our master programme will contribute significantly to the development of future production systems by making a personnel resource available to the industry that is equipped with technological knowledge, soft and management skills.

Univ.-Prof. Dr.-Ing. Fritz Klocke, Scientific Director



Structure of the Programme

This programme is comprised of three semesters of lectures, exercises, seminars, and laboratory courses, a two month industrial internship, and a four month period devoted to preparing a master's thesis. In the 4th semester the master's thesis has to be performed. The programme is especially designed for international students and offers particular services aimed at this target group:

- **Content Coaching**

The participants of the master programme will benefit from personal coaching on all issues regarding the contents of the course. The students will find assistance with the preparation and the wrap-up of classes as well as the preparation of exams.

- **Social Coaching**

The content coaching will be complemented by an extensive social coaching on a broad spectrum of issues. The aim is to create an efficient learning and working environment at the study place Aachen. Support is offered from the admission all the way to graduation and beyond.

To achieve a Master of Science in Production Systems Engineering, students have to satisfy certain requirements by taking seven compulsory courses, selecting three technical electives and two general electives (one technical and one non-technical course). Additionally for an introduction into industrial employment an internship of nine weeks has to be done followed by a mini thesis and a master's thesis at the end of the studies. These offer the opportunity to either hone deeper into one's favourite engineering science area, or possibly engage in an applied case study of a real industrial problem.



Subjects of the Programme

The programme provides in-depth knowledge and understanding of production technology, production systems, and production-related processes. It particularly focuses on industrial R&D practice in the four areas of

- Organization,
- Manufacturing technology,
- Production machines and resources,
- Quality management.

Insights from research projects flow directly into teaching, ensuring that the contents of courses are always up-to-date. The programme also aims at educating the students' ability to manage and lead project teams, to strengthen their skills in scientific documentation and communication.

The core subjects are the same for all M.Sc. students studying Production Engineering at RWTH. Compulsory subjects cover the fundamentals of the chosen specialization. This includes: Systematic Engineering Design I & II or two other combinations of two English taught courses. For the elective subjects, students can choose from one of several possibilities in the field of Logistics, Welding Fabrication Processes, Virtual Machine Tool, Advanced Software Engineering, Tribology, Production Metrology, Modelling, or Mechatronic Systems.

	SUBJECT	ECTS Credits	SWH
COMPULSORY COURSES	Automatic Control	7	5
	Welding Fabrication Processes I	6	4
	Manufacturing Technology I & II	10	8
	Machine Tools I & II	10	8
	Production Management A & B	10	8
	Quality Management	6	4
	Industrial Engineering, Ergonomics & Work Organisation	6	4
	1 st -3 rd Technical Elective	15	12
	General Technical Elective	6	4
	General Non Technical Elective (German Language Course)	6	4
	Industrial Internship	9	9 weeks
	Mini thesis	9	260 h
	Master's thesis	20	4 months
	Total:	120	61

RWTH Aachen University Master Programme



Organisational Information

Duration of Study:	4 semesters (2 years)
Next Start:	every year, 1 st of October + 6 weeks before start: German Course
Master Certificate:	Master Certificate of RWTH Aachen University
Master Degree:	M.Sc. (Master of Science) in Production Systems Engineering
Tuition Fee:	3700 € per semester
Scientific Director:	Univ. Prof. Dr.-Ing. Fritz Klocke Laboratory for Machine Tools and Production Engineering (WZL) of Aachen University Chair of Manufacturing Technology
Place of Study:	Aachen, RWTH Aachen University

Prerequisites

A candidate should have a recognised first degree (Bachelor of Science or Engineering) in an engineering discipline such as Mechanical, Manufacturing, Industrial or Production Engineering, awarded by an internationally recognised university-level institution. Candidates should have also performed above average in their undergraduate studies. The Graduate Record Examination (GRE) is also required. The candidates must be able to speak and write fluently in English (TOEFL 550 paper-based/213 computer-based or IELTS 6.0). Please check our website for special entrance requirements.

RWTH Aachen University

RWTH Aachen University is the largest university of technology in Germany and one of the most renowned technical universities in Europe, with around 28,000 students, more than the half of which are in engineering. Every year numerous international students and scientists come to the RWTH Aachen to benefit from the internationally recognised world-class courses and facilities. Almost 5,000 international students are currently enrolled within the undergraduate, graduate or PhD programmes. The proximity of Aachen to the Netherlands, Belgium and Luxembourg combined with the subsequent exposure to a variety of cultural heritages has placed RWTH Aachen University in a unique position with regards to the reflection and promotion of international aspects and intensive interaction with other universities.

Please send your application
until 1st of March to:

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