Faculty of Mechanical Engineering at RWTH Aachen University
Outline

• The Faculty’s position as part of RWTH Aachen University
• Studying at the Faculty of Mechanical Engineering
• Structure and Funding
• Excellence Initiative and Interdisciplinary Research Partnerships
• Faculty International
The Faculty’s position as part of RWTH Aachen University
Dean’s Office

Univ.-Prof. Dr.-Ing. Wolfgang Schröder
Dean

Univ.-Prof. Dr.-Ing. Katharina Schmitz
Vice Dean
Dean’s Representative

Univ.-Prof. Dr.-Ing. Christian Hopmann
Associate Dean of Finances

Univ.-Prof. Dr.-Ing. Dirk Müller
Associate Dean of Structure

Univ.-Prof. Dr.-Ing. Dieter Moormann
Associate Dean of Studies
Management

Ruth Heßberger, M. A.
Managing Director
• Faculty Council, Council of Elders, Dean‘s Meeting
• Faculty Conference

Dipl.-Ing. Julia Meul
Substitute Managing Director
• Head of Teaching and Learning Division
• Lecture Hall Management
Divisional Management

Dipl.-Ing. Katrin Ansorge
Head of Teaching and Examination Organization
- Coordination of all committees of the faculty involved in the organization of teaching and examinations
- Study Counselling

Dr. phil. Sabrina Grübener
Coordination of the International Division
- Advisor for the International Strategy of the Faculty
- Double Degree programs and agreements of doctoral joint thesis supervision (Cotutelle)
- Advisor of the Student Learning Assessment Committee

Dipl.-Wirt.-Ing. Martin Müller
Head of Student Services
- Master's Application of the Faculty
- Study Counselor of mechanical engineering related teaching degrees
Divisional Management

Marco Pingen
Head of Budget and Human Resources Division
- Advisor for Accounting, Budget and Human Resources
- Quality Improvement Funds

Olaf Straube
Head of IT and Media Division
- Network
- Databases
Leon Beganer  
Apprentice  
• Trainee as an IT specialist in the field of system integration

Sophia Blomeyer, LL.M.  
Advisor of the Study Advisory Council  
• Study Advisory Council  
• Examination Boards  
• Application Review
Dean’s Office Administration

Marko Breuer
• Reception Faculty Head Office

Maria Camacho van den Hurk, M. Sc.
Mentoring and Psychological Counselling
• Mentoring, Psychological Counseling and Learning Strategies for all students of the Faculty of Mechanical Engineering

Dipl.-Dolm. Julia Costa
Assistant to the Dean
• Examination boards "Computational Engineering Science" and "Simulation Sciences"
• Support of the Incoming Students
• Study Abroad Counsel
Dean’s Office Administration

Monika Dahmen-Göbbels
Doctoral Studies
  • Doctorate Procedure
  • Graduation Statistics
  • Teaching Obligations

Andrea Dohms, M. A.
Academic Advisor and Gender and Diversity
  • Coordination Commission for Equal Opportunities
  • Study Counselling
  • RWTH Education Fund, Scholarships
  • Dean’s List

Matthias Dorgeist, M. A.
Assistant to the Dean
  • Examination Board Mechanical Engineering
  • Study Counselling
Dean’s Office Administration

**Lea Eisen**
Apprentice
- Trainee in Office Management

**Stefanie Grotthaus, B. A.**
Public Relations and Marketing
- PR and Social Media
- Organization and Implementation of various Events

**Inge Hombrecher-Muckel**
Controlling and Accounting
- Accounting of the Faculty
- Purchasing
Dean’s Office Administration

**Mario Junge**  
Controlling and Statistics  
- Controlling  
- Quality Improvement Funds

**Marina Kipp**  
Apprentice  
- Trainee in Office Management

**Eva Kolligs**  
IT Specialist  
- Application and Database Development
Dean’s Office Administration

Stefan Köpke
Internship Office
- Accreditation of performed internships

Alexander Krestel
Apprentice
- Trainee in Office Management

Silke Lambertus, B. A.
Assistance of the Managing Director
- Appointments
- Apl. and Honorary Professorships and Habilitations
Dean’s Office Administration

Tim Lehmkuhl
Office for Doctoral Studies and Internship Office
• Doctorate Procedure
• Accreditation of performed internships

Alexandra Levay
Public Relations and Media
• Photography and Graphics
• PR
• Websites, Social Media

Luca Leynen
Apprentice
• Trainee as an IT specialist in the field of system integration
Dean’s Office Administration

**Eva Maintz**  
Organisation of Academic Matters  
• Lectureships

**Daniel Nikolic**  
IT Specialist  
• Application and Database Development

**Anna Pringnitz, M. Sc.**  
Mentoring and Psychological Counselling  
• Mentoring, Psychological Counseling and Learning Strategies for all students of the Faculty of Mechanical Engineering
Dean’s Office Administration

Seda Sancaktar-Zeybek
Coordinator for International Relations
- Establishment and Support of Faculty Contacts Abroad
- International Cooperation
- Study Abroad Counsel

Tobias Seinsch, B. Sc.
PuL und RWTHonline - Support
- RWTHonline Modulemanagement
Vone Schenk, M. Sc.
Assistant to the Dean and Coordinator for International Relations
- Examination Board Business Administration and Engineering
- Study Counselor
- Establishment and Support of Faculty Contacts Abroad and international Cooperation

Patrick Schunn, M. A.
Structure
- Appointments
- Apl. and Honorary Professorships and Habilitations
- PR
We are…

at the leading edge of research
are confirmed by the rankings for mechanical engineering

also committed internally
Speaker in 4 of 8 profile areas and in 4 of 26 SFB

powerful in terms of third-party funding
is responsible for 38% of the third-party funds at the RWTH

well established in teaching
9 Bachelor and 19 Master Degree Programs

one of the largest mechanical engineering faculties worldwide
1,058 New enrolments in WS 2022/23
Advertising Mechanical Engineering
Activities at Faculty of Mechanical Engineering

- RWTH Study Information Day
- Girls’ Day & Boys’ Day
- Science Nights “5 vor 12”
- Lecture series “What’s a steam engine?”
  Technological phenomena in the engineering sciences
- Chemical Engineering Day
- RoboScope - Interdisciplinary Robotics Laboratory
- CAMMP - Computational and Mathematical Modeling Program (RWTH Education Laboratory)
- Unihits for Kids and Kids University
- Visits to Institutes
- Speeches in High Schools
Studying at the Faculty of Mechanical Engineering
### Degree Programs of the Faculty of Mechanical Engineering (35 Degree Programs)

**9 Bachelor Programs**  
(including 5 Teacher Training)

- Mechanical Engineering  
- Business Administration and Engineering  
- Computational Engineering Science  
- Technical Communication, 2nd Major Basic Principles of Mechanical Engineering  
- Teacher Training Programs (B. Ed.) for Vocational Schools in the fields:
  - Machine Technology  
  - Supply Technology  
  - Textile and Clothing Technology  
  - Automotive Technology  
  - Manufacturing Technology

**19 Master Programs**  
(including 5 Teacher Training)

- Automotive and Transportation Engineering  
- Aerospace Engineering  
- Chemical Engineering  
- General Mechanical Engineering  
- Development and Design Engineering (discontinuing)  
- Energy Engineering  
- Plastics and Textile Engineering  
- Production Technology  
- Product Development  
- Business Administration and Engineering  
- Computational Engineering Science  
- Automation Technology  
- Simulation Sciences  
- Automotive Engineering  
- Technical Communication, 2nd Major Basic Principles of Mechanical Engineering  
- Teacher Training Programs for Vocational Schools (M. Ed.)

**7 Privately offered by the International Academy**

- Computer Aided Conception and Production in Mechanical Engineering  
- Production Systems Engineering  
- Management and Engineering in Computer Aided Mechanical Engineering  
- Management and Engineering in Productions Systems  
- Textile Engineering  
- Robotic Systems Engineering  
- Networked Production Engineering

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> see vocational field of study Bachelor
Structure of the Mechanical Engineering Program at RWTH Aachen University

Bachelor
- 7 semesters
- 1 bachelor program
- 1st – 4th semester equal for all
- As of 5th semester: 5 occupational field-related modules
- Transition to any master program possible

B. Sc.
- 20 weeks internship
- 1 project work (6 weeks)

Master
- 3 semesters
- 9 master programs

M. Sc.
- Master's Thesis (22 weeks)

Time
Structure of the Business Administration and Engineering in the field Mechanical Engineering Program at RWTH Aachen University

Bachelor
- 7 semesters
- 1 bachelor program
- 1st – 4th semester equal for all
- As of 5th semester: 5 occupational field-related modules

Master
- 3 semesters
- 1 master program
- 6 fields of specialization

Bachelor's Thesis (10 weeks)

Master's Thesis (22 weeks)

20 weeks internship

Start of Studies

Time
Structure of the Computational Engineering Science Program at RWTH Aachen University

Bachelor
- 7 semesters
- 1 bachelor program

12 weeks internship

Bachelor’s Thesis (10 weeks)

Start of Studies

Master
- 3 semesters
- 1 master program
- 3 fields of specialization

Master’s Thesis (22 weeks)

Time
### Structure of Modules of the Bachelor Program Mechanical Engineering

<table>
<thead>
<tr>
<th>Modules</th>
<th>Share (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Principles of Engineering</td>
<td>40 %</td>
</tr>
<tr>
<td>Basic Principles of Mathematics and Natural Sciences</td>
<td>20 %</td>
</tr>
<tr>
<td>Basic Principles of System Sciences</td>
<td>15 %</td>
</tr>
<tr>
<td>Basic Principles of Social Sciences</td>
<td>7 %</td>
</tr>
<tr>
<td>Occupational Field-Related Modules</td>
<td>18 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>
Students by Faculty

Fac. 1: Faculty of Mathematics, Computer Science and Natural Sciences
Fac. 2: Faculty of Architecture
Fac. 3: Faculty of Civil Engineering
Fac. 4: Faculty of Mechanical Engineering
Fac. 5: Faculty of Georesources and Materials Engineering
Fac. 6: Faculty of Electrical Engineering and Information Technology
Fac. 7: Faculty of Arts and Humanities
Fac. 8: Faculty of Business Administration and Economics
Fac. 10: Faculty of Medicine

Number of students: 47,078

* incl. 4,566 students in “Business Administration and Engineering”
Series of new registrations as persons

Source: Dezernat 6
Structure and Funding
### The RWTH Aachen University in Figures - 2022

#### Financing (actual expenses)

- **Total Revenue**: €1192M
- **Third-party funds**: € 488M
- **Budgetary funds**: € 585M
- **Special funds**: € 119M

#### Personnel (in full-time equivalent)

- **Total**: 10,272
  - **Professorships**: 557
  - **Research assistants**: 6,264
  - **Non-academic staff**: 2,979
  - **Student and scientific assistants**: 2,816

#### Teaching (for the winter semester)

- **Degree programs** (bachelor, master, teacher training): 173
- **Students total**: 47,078
- **New enrollments**: 10,060
- **Internationale students**: 14,150
- **Graduates**: 8,016

#### Research

- **Doctoral Studies**: 962

Source: Dezernat 6
The Faculty of Mechanical Engineering in Figures - 2022

Financing (actual expenses)

- Total Revenue €328,8M
- Third-party funds €184,9M
- Budgetary funds €131,2M
- Special funds €12,8M

Personnel (in full-time equivalent)

- Total 2,340
- Professorships 59
- Research assistants 1,590
- Non-academic staff 688
- Student and scientific assistants 1,025

Teaching (each winter semester)

- Degree programs (Bachelor, Master, Teacher Education) 35
- Students total 11,843
- New enrolments 1,058
- Students international 3,532
- Graduates 2,000

Research

- Doctoral Studies 220

Source: Dezernat 6, Dean's Office
Third-party Funds of RWTH Faculties 2022

Fac. 1: Faculty of Mathematics, Computer Science and Natural Sciences
Fac. 2: Faculty of Architecture
Fac. 3: Faculty of Civil Engineering
Fac. 4: Faculty of Mechanical Engineering
Fac. 5: Faculty of Georesources and Materials Engineering
Fac. 6: Faculty of Electrical Engineering and Information Technology
Fac. 7: Faculty of Arts and Humanities
Fac. 8: Faculty of Business Administration and Economics
Fac. 10: Faculty of Medicine

Faculties

In Millions of Euros

Fac. 1 | 65
Fac. 2 | 5
Fac. 3 | 25
Fac. 4 | 185
Fac. 5 | 39
Fac. 6 | 42
Fac. 7 | 9
Fac. 8 | 14
Fac. 10 | 72
Other* | 33

External funding of that SFBs and GRKs
## Assets Planning

<table>
<thead>
<tr>
<th>Basic Assets</th>
<th>Teaching Load</th>
<th>Research Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>W3 (C4): 3 research assistants</td>
<td>Lectures, tutorials, exams etc., 50% of study and final theses</td>
<td>Doctorates, publications and third-party funds, 50% of study and final theses</td>
</tr>
<tr>
<td>W2 (C3): 1 research assistant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Faculty job pool**
- Long-term control of teaching load
- Quota: ± 20% of the faculty average

**Total:**
- Teaching load: ca. 70%
- Research load: ca. 30%
Excellence Initiative and Interdisciplinary Research Partnerships
Excellence Initiative at the RWTH Aachen University
The two funding lines

Cluster of Excellence

- Internet of Production (former Integrative Production Technology for High-Wage Countries)
- The Fuel Science Center (former Tailor-made Fuels from Biomass)
- Matter and Light for Quantum Computing (new; Coordinating University: University of Cologne)

University of Excellence

The Integrated Interdisciplinary University of Science and Technology – Knowledge. Impact. Networks.
Excellence Initiative
Participation of the Faculty of Mechanical Engineering

First, second and third round of application
Applications approved by DFG and Science Council under the leadership of the Faculty of Mechanical Engineering

• Graduate Schools for promoting young academics
  First line of funding
  – AICES Aachen Institute for Advanced Study in Computational Engineering Science
    - Spokesperson: Univ.-Prof. Marek Behr, Ph. D.

• Exzellenzcluster to promote excellence in research
  Second line of funding
  – Integrative Production Technology for High-Wage Countries (ending 12/2018)
    - Coordinator: Univ.-Prof. Dr.-Ing. Christian Brecher
  – Tailor-Made Fuels from Biomass (ending 12/2018)
    - Coordinator: Univ.-Prof. Dr.-Ing. Stefan Pischinger

  Third line of funding
  – The Fuel Science Center (starting 01/2019) – Adaptive Conversion Systems for Renewable Energy and Carbon Sources
    - Spokesperson: Univ.-Prof. Dr.-Ing. Stefan Pischinger
  – Internet of Production (starting 01/2019)
    - Spokesperson: Univ.-Prof. Dr.-Ing. Christian Brecher
Third round of application
Activities of the Faculty of Mechanical Engineering within the framework of the Future Concept II RWTH 2020 – Meeting Global Challenges

- Measure 1 - Internationally Recognized Scientific Profile
- Measure 2 - JARA: Focusing Competences – Shaping the Future
- Measure 3 - Place to Be
- Measure 4 - Corporate Governance and Structures
Enhancing Multi-Disciplinary Collaboration

- **MSS**  Modeling & Simulation Sciences
  - Spokesperson: Univ.-Prof. Marek Behr
- **ECPE**  Energy, Chemical & Process Engineering
  - Spokesperson: Univ.-Prof. Dr.-Ing. Stefan Pischinger
- **ICT**  Information & Communication Technology
  - Spokesperson: Prof. Dr. ir. Dr. h. c. (AAU) Joost-Pieter Katoen
- **MatSE**  Material Science & Engineering
  - Spokesperson: Prof. Dr.-Ing. Sebastian Münstermann
- **MedST**  Medical Science & Technology
  - Spokesperson: Prof. Dr. med. Fabian Kiessling
- **MSE**  Molecular Science & Engineering
  - Spokesperson: Prof. Dr. rer. nat. Ulrich Schwaneberg
- **MTE**  Mobility & Transport Engineering
  - Spokesperson: Univ.-Prof. Dr.-Ing. Lutz Eckstein
- **ProdE**  Production Engineering
  - Spokesperson: Univ.-Prof. Dr.-Ing. Thomas Bergs
I³ - Interdisciplinary Integrated Institutes

Development and continuation of established interdisciplinary fields of research with a particular strategic meaning

• I - Cubes recognised as such by RWTH:
  – CWD - Center for Wind Power Drives
  – TM - Technology in Medicine

• Other I³ - Cubes identified by Faculty:
  – FDC – Fuel Design Center
  – HIA - Helmholtz-Institute for Biomedical Engineering of the RWTH Aachen
  – iCBT - Center for Human Centered Building Technology
  – MS - Modeling and Simulation
  – NGP² - Center for Next Generation Processes and Products
  – ZMB - Center for Metallic Design
Project Houses

Intensively working on current and particularly relevant research fields in the context of global challenges

- Project Houses recognised as such by RWTH:
  - ACA  Center for Automotive Catalytic Systems Aachen
  - ACTurbo  Aachen Center for Turbomachinery Manufacturing
  - CMT  Center of Molecular Transformations
  - ICMEaix  Integrated Computational Materials Engineering
  - P2F  Power to Fuel
  - PHW  Project House Water
  - TESYS  Technical-Based Energy System Analysis

- Project Houses identified by Faculty:
  - ATC  Aldenhoven Testing Center
  - CMM  Center for Mobile Machinery
  - ZEP  Center for Electric Car Production
• **SFB 1120**  Precision manufacturing by controlling melt dynamics and solidification in production  
  – Spokesperson: Univ.-Prof. Dr.-Ing. Uwe Reisgen

• **TRR 129**  Oxyflame - Development of Methods and Models to Describe Solid Fuel Reactions within an Oxy-Fuel Atmosphere  
  – Spokesperson: Univ.-Prof. Dr.-Ing. Reinhold Kneer

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**Collaborative Research Centers and Transregio SFBs with Participation from RWTH Researchers**

• **TRR 96**  Thermo-Energetic Design of Machine Tools  
  – Coordinating at RWTH: Univ.-Prof. Dr.-Ing. Christian Brecher  
  – Spokesperson University: University of Dresden
DFG - Research Units

- **FOR 2401** Optimization-Based Multiscale Control of Low-Temperature Combustion Engines  
  - Spokesperson: Univ.-Prof. Dr.-Ing. Jakob Andert

- **FOR 2687** Cyclical Variations in Highly Optimized Spark-Ignition Engines: Experiment and Simulation of a Multi-Scale Causal Chain  
  - Spokesperson: Univ.-Prof. Dr.-Ing. Heinz Pitsch

Nationale Research Data Infrastructure (NFDI) at RWTH Aachen University

- **NFDI4Ing** National Research Data Infrastructure for Engineering Services  
  - Spokesperson: Univ.-Prof. Dr.-Ing. Robert Schmitt
DFG - Research Training Groups

DFG Research Training Groups at RWTH Aachen University

- **GRK 1856/2** Integrated Energy Supply Modules for On-Road Electromobility - mobilEM
  - Spokesperson: Univ.-Prof. Stefan Pischinger

International DFG Research Training Groups at RWTH Aachen University

- **IRTG 2379/1** Modern Inverse Problems: From Geometry and Data to Models and Applications
  - Spokesperson: Univ.-Prof. Marek Behr, Ph.D.

International DFG Research Training Groups at RWTH Aachen University

- **GRK in TRR 129** Oxyflame – Development of Methods and Models to Describe Solid Fuel Reactions within an Oxy-Fuel Atmosphere
  - Spokesperson: Univ.-Prof. Dr.-Ing. Reinhold Kneer
Other Programs

Marie Skłodowska-Curie-Initial Training Networks (ITN)

- **BiolImplant**  European Training Network to develop improved Bioresorbable Materials for Orthopaedic and Vascular implant Applications
  - Coordinator: Univ.-Prof. h. c. (MGU) Dr.-Ing. Dipl.-Wirt. Ing. Thomas Gries

- **xCTing**  Enabling X-ray CT based Industry 4.0 process chains by training Next Generation research experts
  - Coordinator: Univ.-Prof. Dr.-Ing. Robert Schmitt

- **AutoCheMo**  Automatic Generation of Chemical Models
  - Coordinator: apl. Prof. Dr. rer. nat. Kai Leonhard

- **TOPCSP**  Towards Competitive, Reliable, Safe and Sustainable Concentrated Solar Powers (CSP) Plants
  - Coordinator: Univ.-Prof. Dr.-Ing. habil. Manfred Christian Wirsum

**GRS**  German Research School for Simulation Sciences

- Spokesperson: Univ.-Prof. Marek Behr, Ph. D.
Other Programs

EU Projekte coordinated by RWTH Aachen

- **MatCH4Turbo**  
  Material Model of Case-Hardened Steels for Turbo Gear Applications  
  - Coordinator: Univ.-Prof. Dr.-Ing. Christian Brecher

- **CROSSONT**  
  CROowned Spline Surface Optimization using New Treatments  
  - Coordinator: Univ.-Prof. Dr.-Ing. Christian Brecher

ERC Advanced Grant

- **MILESTONE**  
  Multi-Scale Description of Non-Universal Behavior in Turbulent Combustion  
  - Grantholder: Univ.-Prof. Dr.-Ing. Heinz Pitsch
Appropriation of Tuition Fee Substitutes
### Tuition Fee Substitutes Appropriation Procedures Basics

**Basics for the appropriation of tuition fee substitutes:**

> “White Paper on the utilization of tuition fee substitutes: at the Faculty of Mechanical Engineering of RWTH Aachen University“

**Key principles of the white paper:**

> “Improvement of the quality of education as a primary goal for the utilization of funds from tuition fee substitutes“

**Target to be achieved by the following measures:**

> Measures for a significant increase of the success rate and support of the core subjects of mechanical engineering“

> „Measures to promote excellent students“

*(Faculty Council Decision on Dec. 12th, 2006)*
Tuition Fee Substitutes
Appropriation Control Loop

Revenue from tuition fee substitute

Subcommittee tuition fee substitutes

Dean's Office

Other measures, if necessary

Budget Committee

Study Advisory Council

Faculty Council

Institutes

Evaluation Committee

Other measures, if necessary
Faculty International
Faculty International Study Abroad

- **ERASMUS**
  - More than 70 European partnerships on faculty and institute level

- **International Study and Education Partnerships: USA, Australia and Mexico**
  - Institute contacts with US and Australian universities through the DAAD ISAP Program

- **Korea University and Hongik University**
  - Study abroad South Korea

- **Zhejiang University, Northwestern Polytechnical University (NPU) and University of Michigan - Shanghai Jiao Tong University Joint Institute**
  - Study Stay at the prestigious Universities in the People’s Republic of China

- **Joy Programms**
  - Cooperation with the Yokohama National University (YNU) in Japan

- **ITESM**
  - Cooperation with Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico

- **Tsinghua (Double Degree)**
  - Joint Degree with Tsinghua University in Beijing

- **Ecole Mines de Douai and DFH/T.I.M.E. France (Double Degree)**
  - Double Diploma Program with five Grandes Écoles in France

- **T.I.M.E. Japan (Double Degree)**
  - Double Diploma Program with one of Japan's leading technical universities

- **T.I.M.E. Valencia (Double Degree)**
  - Double Diploma Program with one of Spain's leading technical universities Universidad Politécnica de Valencia (UPV)

- **Wroclaw (Double Degree)**
  - Double Diploma Program with one of Polen's leading technical universities Wroclaw University of Science and Technology (WUST)

- **German University of Technology (GUtech)**
  - Internships and stays as tutor at technical university in Oman

- **Free Mover**
  - Support for self-organized exchanges
• Recommended mobility time slots (B.Sc.) from 5th semester on

1 2 3 4 5

• Recommended mobility time slot (M.Sc.): 2nd/3rd semester

1 2
Faculty International Study Abroad Counseling

- Exchange Programs
- Application Process
- Accreditation Procedure

„Outgoings“

Cultivation and development of contacts

Study Abroad Counseling

„Incomings“

Foreign University

Faculty of Mechanical Engineering

Mentoring Exam Registration Course Selection
Faculty International

International students at the RWTH Aachen in WS 2022/23 sorted by faculties

Source: Department 6