STUDY IN GERMANY

Prof. Dr.-Ing. Prof. E.h. mult. Rudolf Kawalla
Vice Rector for Research
Content

- Study in Germany
- Qualification possibilities
- Kind of Universities
- Universities of Cooperative Education (Dual System)
- Examples of study on Dual Systems
Schools and universities - responsibility of the single states

- 16 federal states!
- 16 different laws for higher education!
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Qualification possibilities (accredited)

- **University of Applied Sciences**
  - Bachelor (6-7 semesters)
  - Master (3-4 semesters)
  - Doctoral degree
  - Postdoctoral qualification (habilitation)

- **University**
  - Bachelor (6-7 semesters)
  - Master (3-4 semesters)
  - (Admission requirements)

- **University of Cooperative Education**
  - Bachelor (6 semesters)
  - (Admission requirements)
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Types of Universities

There are three types of higher education institutions in Germany:

- Universities and technical universities (state-accredited universities)
- Universities of applied sciences - Fachhochschulen
- Colleges of art, film and music
New structure - new programs in Germany (Bachelor & Master)

Bachelor and master programs offered parallel to or in lieu of the traditional programs (Diploma) within this two-step (cycle) degree system:

- **Bachelor** after 3 to 4 years
- **Master** after 1 to 2 years

Total standard period of study for consecutive Bachelor and Masters study courses is a maximum of 5 years
Characteristics of Bachelor studies

- Mathematics → Specialisation
- Topic-related basics → Study lines
- → Internship

1. – 4. semester 5. – 6./7. semester

Study duration: 6 or 7 semesters
Characteristics of Master studies

Specialisation → Master Thesis

1. – 2./3. semester  →  3./4. semester

Study duration: 3 or 4 semesters
Characteristics of traditional Diplom programmes

(only Saxony)

- Mathematics
- Science
- Topic-related subjects
  (introductory level)

→ Specialisation
→ Internship
→ Exam + Diploma thesis

Pre-Diploma | Diploma

Total duration of study: usually 9 or 10 semesters
Differences between universities of applied sciences (Fachhochschulen) and state-accredited universities

Importance of research

- at universities
  - research and education as duties of equal importance and time demand

- at universities of applied sciences:
  - teaching as duty of main importance
Differences between universities of applied sciences (Fachhochschulen) and state-accredited universities

Scientific staff

- at universities of applied sciences 1 scientist for 13 students
- at universities 1 scientist for 7 students

<table>
<thead>
<tr>
<th>Teaching load</th>
<th>scientific staff</th>
<th>university</th>
<th>university of applied sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>professor</td>
<td>8 hours</td>
<td>18 hours</td>
<td></td>
</tr>
<tr>
<td>assistant</td>
<td>4 hours</td>
<td>12 hours</td>
<td></td>
</tr>
</tbody>
</table>

per week; semester (15 weeks) but not in the period without lectures
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UNIVERSITY OF COOPERATIVE EDUCATION
(BERUFSAKADEMIEN – DUAL - SYSTEM )

- tight integration of academic instruction and practical training
- half of program at the college and the other half in a private company (such as a technology business or bank) or public institution
- theoretical training at the college and practical work at the company alternate in 3-month blocks
- companies select the students and offer them a salaried contract
- at the end of the three-year program, students receive a Bachelor's degree; some also pursue Master's degrees

www.duales-studium.de
University of Cooperative Education – classification within German higher education

- Higher education entrance qualification (e.g. A levels)
- Advanced further training (e.g. technician, master craftsman)
- Vocational training/apprentice-ship

University of Coop. Education → Indenture (contract with a cooperating company)

University of Applied Science
- Undergraduate degree (Bachelor), or Diploma (BA)

University
- Postgraduate degree (Master)

Universities with right to award doctoral degrees

Occupation/job
Facts:

- Founded in 1991 in Dresden
- 7 self-governing locations
- Approx. 4200 (2016) students
- In about 40 programs of study: economics, engineering, informatics and social sciences
Transfer of knowledge by the dual study system

Cooperating company:
Application-oriented knowledge transfer and acquisition of professional know-how/experience

State academy:
Teaching and knowledge transfer of academic and theoretical as well as practical courses

Coordination: organisation and in regard to contents of organisation, management, control
Process of study: key to success within 6 semesters

1. Semester

2. Semester

3. Semester

4. Semester

5. Semester

6. Semester

Final degree after 6 semesters 180 ECTS-Credits

Modular concept; 180 ECTS-Credits

Small groups; Individual mentoring

Financial security: Compensation by company (+ student loan); social insurance

Diverse, active teaching methods

Compulsory attendance; holidays instead of semester breaks

TU Bergakademie Freiberg | Vice-Rector Research| Telefonnummer: 03731 / 39-2552 | www.tu-freiberg.de | Prof. Dr.-Ing. Prof. E.h.multi. R. Kawalla | Study in Germany| 01.03.2017

Bilder (v.l.n.r.): Saklakova – Fotolia, C. Jacquemin– Dresden; Stefan Floss – Dresden; Franziska Wels – Dresden; Wrangler – Fotolia; BA-Sachsen
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Examples

University of Cooperative Education Riesa

Bachelor Degree courses

- **Mechanical Engineering**
- Laboratory Technologies and Process Engineering (Biotechnology, Environmental Technology, Medical Technology)
- Business Administration and Service Management (Event and Sports Management, Commercial Management)
- Energy and Environmental Engineering (Facilities Technology, Energy Engineering)
Theoretical content

Bachelor of Mechanical Engineering

Basic knowledge of mechanical engineering
Engineering, CAD, CAE, Technical Mechanics, Technical Thermodynamics, flow mechanics, materials, Engineering, Mathematics, Computer Science, Electrical Engineering, Methods of product development

Management qualifications
Management, business management, marketing, Law and labor protection, English

Special knowledge
Quality management, production measurement technology, gearboxes, machine dynamics, hydraulics, control and regulation technology, plastic technology
Courses construction

Theoretical part of study in sight of construction

1\textsuperscript{st} semester: design theory / CAD, technical mechanics, mathematics, materials and manufacturing technology,

3\textsuperscript{rd} semester FEM (Finite-Element Method)

4\textsuperscript{th} semester: Fluid Mechanics / CFD (Computational Fluid Dynamics),

6\textsuperscript{th} semester: Methods of product development
Practical content

1st year of study

- Learning of manual and mechanical basic skills in metal processing and testing and assembly technology
- Learn about industry and company specific special procedures
- Information on work process, standardisation, legal regulations and documentation of the production process
- Processing of tasks in the field of production,
- Work organisation, experiment and construction

2nd year of study

- Apply basic skills in the assembly process
- Introduction into engineering work, e.g. in the order and production planning, work preparation, customer service, design, test, quality assurance, product acceptance and distribution
Practical content

3rd year of study

- Independent processing of partial tasks in technical problems and their solution professional support in the respective field of application the training company

- Introduction to the future tasks of the graduates

- Bachelor thesis
# Mechanical Engineering - Credit Points

<table>
<thead>
<tr>
<th></th>
<th>Sum / Semester</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sum credits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>theory modules</td>
<td>24 24 24 21 22 25</td>
<td>140</td>
<td>77,778</td>
</tr>
<tr>
<td>practice modules</td>
<td>6 5 4 7 6</td>
<td>28</td>
<td>15,556</td>
</tr>
<tr>
<td>thesis</td>
<td></td>
<td>12</td>
<td>6,6667</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30 29 28 28 28 37</td>
<td>180</td>
<td>100</td>
</tr>
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</table>
Thank You for Your Attention!

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