RWTH Aachen University
Institute of General Mechanics

H. Topol

28. - 30. June 2010
RWTH
Aachen University
1870: Founded as a polytechnical institute (Polytechnikum)
  ▶ Main purpose: education of engineers for the industry.
  ▶ Schools for different fields of engineering, natural sciences and mathematics.

1899: It was granted the right to award doctoral degrees.

After 1945: Re-established as the Institute of Technology of North Rhine-Westphalia.
Foundation of new faculties and increasing popularity among students.
Nobel Laureates who studied at the RWTH Aachen University:

- Philipp Lenard    Nobel Prize in Physics 1905
- Wilhelm Wien      Nobel Prize in Physics 1911
- Johannes Stark    Nobel Prize in Physics 1919
- Peter Debye       Nobel Prize in Chemistry 1936
- Karl Ziegler      Nobel Prize in Chemistry 1963
**FIRST DEGREE STUDY PROGRAMMES: BA / BSc and MA / MSc**

<table>
<thead>
<tr>
<th>Fac. 1</th>
<th>Fac. 4</th>
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<tbody>
<tr>
<td>Biology (BSc)</td>
<td>Mechanical Engineering (BSc)</td>
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<tr>
<td>Chemistry (BSc)</td>
<td>Automation Engineering (BSc)</td>
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<tr>
<td>Computer Science (BSc)</td>
<td>Computational Engineering Science (BSc)</td>
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<tr>
<td>Mathematics (BSc)</td>
<td>Industrial Engineering Branch of Study Mechanical Engineering (BSc) (with Fac. 8)</td>
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<tr>
<td>Physics (BSc)</td>
<td>Automotive Systems Engineering (MSc)</td>
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<tr>
<td>Biotechnology / Molecular Biotechnology (BSc+MSc)</td>
<td>Chemical Engineering (MSc)</td>
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<tr>
<td>Software Systems Engineering (MSc)</td>
<td>Energy Engineering (MSc)</td>
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<tr>
<td>Media Informatics (MSc, B-IT)</td>
<td>Production Engineering (MSc)</td>
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<th>Fac. 2</th>
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<tbody>
<tr>
<td>Architecture (BSc)</td>
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<tr>
<td>Urban Planning (MSc)</td>
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<th>Fac. 3</th>
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<tbody>
<tr>
<td>Civil Engineering (BSc)</td>
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<tr>
<td>Industrial Engineering Branch of Study Civil Engineering (BSc) (with Fac. 8)</td>
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<th>Fac. 5</th>
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<tr>
<td>Materials Science (BSc+MSc)</td>
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<tr>
<td>Applied Geosciences (BSc)</td>
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<tr>
<td>Georesources Management (BSc)</td>
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<tr>
<td>Mineral Resources Engineering (BSc+MSc)</td>
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<tr>
<td>Applied Geography (BSc)</td>
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<td>Geography (BA) (with Fac. 7)</td>
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<tr>
<td>Industrial Engineering Branch of Study Raw Materials and Materials Technology (BSc)</td>
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<tr>
<td>Waste Management Engineering (BSc) (with Fac. 3)</td>
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<tr>
<td>Materials Engineering (BSc+MSc)</td>
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<td>Metallurgical Engineering (MSc)</td>
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<tr>
<td>Applied Geophysics (MSc – IDEA League)</td>
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FIRST DEGREE STUDY PROGRAMMES: BA / BSc and MA / MSc

**Fac. 6**
- Electrical Engineering, Information Technology and Technical Computer Science (BSc)
- Industrial Engineering Branch of Study Electrical Energy Engineering (BSc) (with Fac. 8)
- Electrical Power Engineering (MSc)
- Communications Engineering (MSc)

**Fac. 7**
- European Studies (MES) (MA)
- English Studies (BA+MA)
- Linguistics and Communication Studies (BA+MA)
- German and General Literature (BA+MA)
- History (BA+MA)
- Philosophy (BA+MA)
- Political Science (BA+MA)
- Psychology (BSc+MSc)
- Sociology (BA+MA)
- Industrial Pedagogy and Cognitive Psychology (BA)

**Fac. 8**
- Business Administration (BSc)
- Economics and Economic Studies in History (BA) (with Fac. 7)
- Industrial Engineering (with Fac. 3, 4, 5 and 6)

**Fac. 10**
- Logopaedics (BSc+MSc)
- Biomedical Engineering (MSc)
International Students 2007/08

International Students / Countries

France
Thailand
Ukraine
Romania
Italy
South Korea, DPR
Netherlands
Indonesia
Morocco
India
Spain
Poland
Greece
Cameroon
Russia
Iran
Belgium
Bulgaria
Luxembourg
Turkey
China, PR

Total: 5,183

and 1,237 international students from 94 further countries
ORIGIN OF RWTH AACHEN UNIVERSITY STUDENTS 2007/08

Total: 30,260

North Rhine-Westphalia: 76%
Other Federal States of Germany: 12%
Foreign Countries: 12%
RWTH Aachen International Students* 2007/08

- European Union: 39%
- Other European Countries: 13%
- Africa: 9%
- America: 5%
- Asia and Australia: 34%

Total: 3,671

*country of origin, not nationality
Institute of General Mechanics
August Ritter (1826 - 1908)

The Chair of Mechanics and present-day Institute of General Mechanics have existed since the founding of the university in 1870.

August Ritter:

- 1856: Polytechnical School in Hannover.
- 1870: Chaired professor in engineering mechanics and mechanics in Aachen.
- The eponymous Ritter method of cut sections in the theory of trusses is well-known. His research interests included many other physical areas such as the adiabatic theory of changes of state.
Ritter’s successor in 1900 was Arnold Sommerfeld:

- Graduation in Königsberg (today Kaliningrad), further work at the University of Göttingen. He came to Aachen from the Mining College of Clausthal.
- 1906: Sommerfeld left for the University of Munich to take up the Chair of Theoretical Physics.
- Together with Max Planck, Albert Einstein and Niels Bohr he is one of the founders of the modern theoretical physics.
Hans Reissner (1874 - 1967)

Between 1906 and 1912, Hans Reissner held the Chair of Mechanics:

- Reissner dealt with the problems of aeronautics with scientific methods.
- The formation of the Institute of Aerodynamics was due to his suggestion.
- 1912: Reissner left for a post at the Technical University of Berlin.
Theodore von Kármán assumed both the Chair of Mechanics and Chair of Aerodynamics as well as the leadership of the Institute of Aerodynamics in 1913:

- Through his work, especially in the area of fluid mechanics, von Kármán created a worldwide reputation for himself.
- 1930: He took over the direction of the Guggenheim Aeronautical Laboratory at the California Institute of Technology (in addition to his activities in Aachen)
Wilhelm Müller (1880 - 1968)

From 1934 to 1939 Wilhelm Müller held the Chair of Mechanics. He worked chiefly on the theory of viscous fluids and the mechanics of flight. Müller left for a post at the University of Munich in 1939.
Schultz-Grunow led the institute until his retirement in 1975. The wide diversity of his work can be seen in the over fifty dissertations completed under his direction. They include topics from the theory of elasticity, rheology, fluid mechanics, thermodynamics, and gas dynamics. Schultz-Grunow was actively involved in the development of shock wave tubes and the associated techniques of short-time measurements.
Gerhard Adomeit was the incumbent of the Chair of General Mechanics from 1975 until 1995. The research emphasis during this time was principally in gas dynamics, especially combustion processes.
Dieter Weichert

Dieter Weichert has led the institute since July 1995.

The institute’s research activities are primarily divided into three areas:

- Limit states of components and structures as a result of inelastic effects such as plasticity, material damage, and crack formation.
- Mechanics of biological structures, with a focus on the human musculoskeletal system.
- Thin-walled structures with emphases on modeling, shock wave loading of plates and shells, and ”smart structures”.
Professors of the chair

D. Weichert
I. Andrianov  R. Schmidt  T. Beck