Institute of Construction Management
Technische Universität Dresden
Prof. Dr.-Ing. Rainer Schach

The Dresden Construction Engineering and Management Profile

GLF-CEM 2012
Global Leadership Forum for Construction Engineering and Management Programs
May 19-20, 2012
1. Dresden and the University
2. Faculty of Civil Engineering
3. Institute of Construction Management
Dresden
Dresden from the right bank of the River Elbe downstream Augustus Bridge, “The Canaletto View”, Bellotto’s second Veduta of Dresden, painted 1747
Facts & Figures

- Teaching

- Budget
14 Faculties
36,534 Students
6,751 Employees (excluding Medicine)
1,420 Employees in Medicine

Institute of Construction Management

Technische Universität Dresden
Number of Students

- Humanities and Social Sciences: 11,837
- Medicine: 2,545
- Natural Sciences: 4,504
- Engineering Sciences: 17,648
- Humanities and Social Sciences: 11,837

WS 2011/12
Civil and Environmental Engineering
- Architecture
- Civil Engineering
- Transport and Traffic Engineering
- Forestry, Geo- and Hydro Sciences

Engineering Sciences
- Electrical Engineering
- Information Technology
- Mechanical Engineering

Humanities and Social Sciences
- Law
- Business Sciences
- Education Sciences
- Philosophy
- Literature and Linguistics

Science
- Mathematics and Natural Sciences (Biology, Chemistry, Psychology)

Medicine
Where Students come from

- Saxony (40.1%)
- East Germany, Without Saxony (25.5%)
- West Germany (20.6%)
- International (13.7%)
Third-Party Funds between 2000 - 2010

- Business done in Mio EUR
- Numbers of projects
Institutes of Civil Engineering Faculty

Mechanics and Shell Structures  Prof. Zastrau
Statics and Dynamics  Prof. Kaliske
Construction Informatics  Prof. Scherer
Construction Materials  Prof. Mechtcherine
Steel and Timber Construction  Prof. Stroetmann, Prof. Haller
Concrete Construction  Prof. Curbach, Prof. Häußler-Combe
Construction  Prof. Weller
Geotechnology  Prof. Herle, Prof. Ullrich
Urban Engineering & Road Construction  Prof. Wellner
Construction Management  Prof. Schach, Prof. Jehle
Hydraulic Engineering  Prof. Stamm, Prof. Graw
1st Semester Student Enrolment in Civil Engineering

- Direct Students
- incl. Students with distance learning courses
Civil Engineering Curriculum

**Semester division of studies**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Overview</th>
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<tbody>
<tr>
<td>10</td>
<td>Diploma thesis</td>
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<tr>
<td>9</td>
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<td>8</td>
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**Specializing studies**

5 Specializations:
- Structural Engineering
- Hydraulic Engineering + Environment
- Urban Development and Transportation
- Construction Management
- Computational Engineering
- GEM – Buildings, Energy, Management

**Degree of a Dipl.-Ing.**

**Main studies**

**Basic studies**

„Vordiplom“
Civil Engineering Curriculum

<table>
<thead>
<tr>
<th>Category</th>
<th>Semester(s)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic studies</strong></td>
<td>1 – 3</td>
<td>90</td>
</tr>
<tr>
<td><strong>Main studies</strong></td>
<td>4 – 6</td>
<td>90</td>
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<tr>
<td><strong>Required courses</strong></td>
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<td>30</td>
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<td>5</td>
<td>18</td>
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<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>Electives</strong></td>
<td>5 &amp; 6</td>
<td>30</td>
</tr>
<tr>
<td><strong>Specializations</strong></td>
<td>7-10</td>
<td>120</td>
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<tr>
<td><strong>Electives</strong></td>
<td>7 &amp; 8</td>
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<td></td>
<td>7 modules with 8 credits each</td>
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<td></td>
<td>2 courses with 2 credits each (soft skills)</td>
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<td></td>
<td>9</td>
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<td></td>
<td>Project semester + final seminar</td>
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<tr>
<td><strong>Diploma Thesis</strong></td>
<td>10</td>
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<td><strong>Total</strong></td>
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<td>300</td>
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Institute of Construction Management

Nürnberger Straße, Construction Management Building of Technische Universität Dresden
Prof. Dr.-Ing. Rainer Schach
Chair of Construction Engineering Management
Director of the Institut of Construction Management
Dean of the Faculty for Civil Engineering

Prof. Dr.-Ing. Peter Jehle
Chair of Construction Technologies and Construction Methods

Prof. Dr.-Ing. Alexej Bulgakow
DAAD Guest-Professor
Furthermore

10 members of staff (graduated as Diplomingenieur) employed usually 5 years

3 additional members
(secretary and technical)
Selection of Topics in Construction Management
- Estimation and Tendering
- Time Scheduling
- Construction Companies Organization
- Site Management and Site Layout
- Computer Programs and IT in Construction Management
- Project Management and Project Development
- Project Financing and Budgeting

Selection of Topics in Construction Methods
- Demolishing and Recycling
- Concrete Works
- Earthworks
- Prefabricated Concrete Elements
- Methods in Machineries
Guideline for safety & health coordinators
Prof. Schach / Dipl.-Ing. Hentschel / Dipl.-Ing. Wach

Strengthening of RC-Slabs with textile reinforcements
Prof. Schach / Dipl.-Ing. Hentschel

Smart Energy Management
Prof. Schach / Dipl.-Ing. Schmuck

Planning cost allowance granted by the government for the construction of railway infrastructure in Germany
Prof. Schach / Dipl.-Ing. Schubert

Joint Research Project „MEFISTO“
Prof. Schach / Dipl.-Wirtsch.-Ing. Flemming

RFID-Technologies in Construction Management
Prof. Jehle / Dr.-Ing. Seyffert / Dipl.-Ing. Wagner
General principle for safety & health coordinators

Duration and budget:
09/2008 – 11/2010
196,914 € (incl. budget partners)

Main goals:
- Self-conception for all tasks referring the safety and health coordinator

Contents and single steps:
- guideline
- good examples
- Interviews and workshops
- ...
Strengthening of RC-Slabs with textile reinforcements

Duration and budget:
06/2008 – 06/2011
451,800 € (excl. budget main partners)

Main goals:
- methods how the material is to be used in an efficient application

Contents and single steps:
- indices for quality and expenditure
- indices for total cost in relation to a determine quantity
- estimation of the completion period for the specific methods
- ...

simple fettle gun  PAGEL-MAWO-injector  Putzmeister-Strobl-air injector
Smart Energy Management

Duration and budget:
08/2009 – 07/2012
1,670,782 € (incl. budget main partners)

Main goals:
- methods of long-term heat storage outside of buildings

Contents and single steps:
- heat storage by hot-water-storage-tanks and gravel-water-reservoirs used for heating:
  construction methods, costs and economic efficiency

hot-water-storage-tank
cost analysis
gravel-water-reservoir
Expertise for the Federal Ministry of Transport, Building and Urban Development, on the sufficiency of the planning cost allowance granted by the government for the construction of railway infrastructure in Germany

Task and Goals
- Examination of the actual height of planning cost for the realization of new railway infrastructure projects
- Benchmarking – comparison of several projects
- Research and proposal for a new and efficient utilization of resources
- Proposal for the future height of the planning cost allowance

Duration: 03/2009 – 01/2012
Budget: 188,500 €
Partner: Dornier Consulting GmbH
MEFISTO is a lead project of the German Federal Ministry of Education and Research with the objective to develop a platform for the execution of construction projects in the form of a management information system. This system will enable real-time and visually descriptive simulations on the basis of up-to-date operational data on all levels of abstraction.

Duration: 04/2009 – 09/2012
Budget: 9.4 Million Euros (total)
Partners: 5 university partners
7 industry partners