Dipartimento di Meccanica
Department of Mechanical Engineering

www.mecc.polimi.it
The Campuses of the Politecnico di Milano
The 16 Departments of the Politecnico di Milano

- Aerospace Engineering
- Architectural Projects
- Architecture and Planning
- Bioengineering
- Building and Environment Sciences and Technology
- Chemistry, Materials and Chemical Engineering “Giulio Natta”
- Electrical Engineering and Information Technology
- Electronics and Information
- Energy
- Hydraulic, Environmental and Surveying Engineering
- Industrial Design, Arts, Communication and Fashion
- Management, Economics and Industrial Engineering
- Mathematics “Francesco Brioschi”
- Mechanical Engineering
- Physics
- Structural Engineering
### Human Resources, Academic Year 2009/2010

<table>
<thead>
<tr>
<th></th>
<th>Politecnico</th>
<th>Dept of Mec</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>1,355</td>
<td>94</td>
<td>7%</td>
</tr>
<tr>
<td>Tech&amp;Admin staff</td>
<td>1,187</td>
<td>42</td>
<td>3.5%</td>
</tr>
<tr>
<td>PhD students</td>
<td>856</td>
<td>65</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

Temporary research staff: \(\approx 50\%\) of permanent staff.

The Professors of the Department are involved in:

- **5 Schools (Scuole)**
- **255 Courses**

for a total workload of about 190 students per Professor (approx. 5% of PoliMi)
The Italian Education System

**3rd level**

**Dottorato Di Ricerca**
Ph.D.

**2nd Level**

**Laurea Magistrale**
Master of Science

**1st level**

**Laurea**
Bachelor

13-year education
PhD Programmes (25)

- Aerospace Engineering
- Architectural Composition
- Architecture, Urban Design, Conservation of Housing and Landscape
- Bioengineering
- Building Engineering
- Design
- Design and Technologies Exploitation for the Cultural Heritage
- Electrical Engineering
- Energetic and Nuclear Science and Technology
- Environmental and Infrastructure Engineering
- Industrial Chemistry and Chemical Engineering
- Information Technology
- Interior Design
- Management, Economics and Industrial Engineering
- Materials Engineering
- Mathematical Methods and Models in Engineering
- Mechanical Engineering
- Physics
- Preservation of Architectural Heritage
- Rotary-Wing Aircrafts
- Spatial Planning and Urban Development
- Structural Seismic and Geotechnical Engineering
- Technology and Design for Environment and Building
- Territorial Design and Government
- Urban and Architectural Design
The Department sites

- Lecco
- Milano
- Cremona
- Mantova
- Piacenza
- Como
Department sites: Milano-Bovisa Campus
Since 1998
Department Offices and Labs

- A new building at the Bovisa-Campus, since December 2007, hosting Offices and Labs (via La Masa 1)

- A building at the Bovisa-Campus is being renovated

<table>
<thead>
<tr>
<th></th>
<th>offices [sq.m]</th>
<th>labs [sq.m]</th>
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<tbody>
<tr>
<td>Campus Bovisa South</td>
<td>3127</td>
<td>3167</td>
</tr>
<tr>
<td>Campus Bovisa East (LaST Lab.)</td>
<td>60</td>
<td>1960</td>
</tr>
<tr>
<td>Leonardo Campus</td>
<td>918</td>
<td>1140</td>
</tr>
<tr>
<td>Lecco Campus</td>
<td>200</td>
<td>470</td>
</tr>
<tr>
<td>Piacenza Campus and MUSP Lab.</td>
<td></td>
<td>1300</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4325</strong></td>
<td><strong>8037</strong></td>
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</table>

Average laboratory area of 80 m²/researcher
Research Activities
**Research Lines**

**Dynamics and Vibration of Mechanical Systems**
- Mechatronics and Robotics – M&R
- Rotordynamics – RTD
- Wind Engineering – WND

**Ground Vehicles**
- Ground Vehicles Design and Testing – VDT
- Railway Dynamics – RWD
- Road Vehicle Dynamics – RVD
Research Lines

Machine Design
- Advanced Design of Mechanical Components – DMC
- Structural Integrity and Prognostics - SIP

Manufacturing and Production Systems
- Analysis, Design and Management of Manufacturing Systems – ADM
- Manufacturing Processes – MPR
- Quality in Manufacturing and Geometrical Tolerances – QGT
Research Lines

Materials
- Advanced Materials – AMT
- Bulk Heat Treatment and Surface Modification – HTS
- Steel Making and Metallurgical Processes – SMP

Methods and Tools for Product Design
- Product Lifecycle Management – PLM
- Virtual Prototyping – VPR
Measurements and Experimental Techniques

- Mechanic and Thermal Measurements - MTM

There is a significant interaction of the research lines in different application areas.
Approx. 1 journal paper and 2 international conference per faculty
Most cited papers (2 citations/year): 113 papers
Over the last five years, the research funding of the Department of Mechanical Engineering has reached 70 k€/researcher. Most of the research funding comes from the cooperation with private partners. Other funding comes from the European Union and the Italian Ministry.
A network of approx. 260 companies (mainly SMEs) hosts our students for their stage as part of their bachelor degree.
The Department believes that the excellence of its laboratories plays a key role in the quality of the research. The facilities in our laboratories are continuously enhanced through significant investments. The cultural level and competences of our technical staff has improved through continuous training (several technicians have got a M.Sc. degree in Mechanical Engineering).

WIND TUNNEL

VEHICLE COMPONENTS

MATERIAL TESTING

RAILWAY COMPONENTS
<table>
<thead>
<tr>
<th>MICROMACHINING</th>
<th>VIRTUAL ENG.</th>
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<tbody>
<tr>
<td><img src="image1" alt="Micromachining" /></td>
<td><img src="image2" alt="Virtual Engineering" /></td>
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<tr>
<th>MECHATRONICS</th>
<th>NEW NDT TECHNIQUES</th>
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<tbody>
<tr>
<td><img src="image3" alt="Mechatronics" /></td>
<td><img src="image4" alt="NDT Techniques" /></td>
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**ENERGY**
- Wind generation
- Hydrogen propulsion

Pursue further the excellence of the research labs, as well as focus the research towards new emerging directions (e.g., energy, new transportation means, Virtual Engineering, new materials, production systems).
Consortia and Spin-Offs (1/3)

**ITALCERTIFER**
Consortium
The European notified body for certification, homologation and research in the railway sector

**MUSP**
Consortium
Skilled in R&D on machine tools and production systems for the advanced manufacturing industry
Dipartimento di Meccanica
Contacts:

Prof. Federico Cheli

Tel. +39 02 2399 8462
Fax +39 02 2399 8492
Federico.cheli@polimi.it

www.mecc.polimi.it