Corso di Studio in Ingegneria Meccanica

Mechanical Engineering Study Programme

ME8: Machine Tools and Manufacturing Systems

www.ccsmecc.polimi.it

Piacenza Campus
• Italy maintains **key positions** in the production of CNC machine tools, robots and automated systems for industry, with companies that export most of their products to supply production systems to the main international brands in automotive, aerospace industry, turbines and machinery for energy, and for a wide range of precision components (from die and moulds to special equipments).

• The development of “machines able to produce other machines” is the most ambitious target for companies in this field, and the **Piacenza’s territory** is well known for the high concentration of manufacturing companies exporting CNC systems all over the world.

• The Mechanical Engineering ME8 track is designed to prepare **mechanical engineers specialized in design, integration and optimization** of CNC machine tools and automated systems for industry.
Mechanical Engineers coming from the ME8 track can easily find professional opportunities, as design engineers or production engineers, offered by a large number of companies operating in advanced manufacturing fields as well as technical dept. engineers inside machine tool builder companies.

*Courtesy of Jobs – FFG Group*
The **Machine Tools and Manufacturing Systems** track provides a robust skills framework for engineers capable of tackling any critical aspect of a manufacturing system.

The core knowledge include subjects such as **monitoring and control** of mechanical systems, the **optimal design** and **control** of machine tools and components, **energy efficiency** evaluations, **dynamic analysis** of machine tools, simulation techniques for flexible manufacturing systems and more ...
Laboratory sessions are held at the MUSP Lab (www.musp.it), applied research lab on Machine Tools and Manufacturing Systems situated at the Piacenza Technopole (connected, by city bus line #19, to the Railway Station).

The activities are characterized by:

- Continuous interaction with experts in machine tool design and dimensioning.

- About 45 hours over 100 are held in laboratory or at the companies plants.

- Group of students take part to a competitive challenge (Project Work on process parameters and machining strategy optimization for the production of a real workpiece).

Main Lab Equipments

- 4 Industrial Furnaces NABERTHERM
- 4-axis Machining Center MANDELLI M5
- CNC-lathe SOMAB 400
- 5-axis Machining Center JOBS Jotech
- 150 ton Hydraulic Press SACMI
- WaterJet Cutting system TECNOCUT
The ME8 study plan (second year) includes four specialization courses, two for each semester, and the master thesis:

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- **Video**
  - ITA:  [www.youtube.com/watch?v=TE1LUEGybWU](http://www.youtube.com/watch?v=TE1LUEGybWU)
  - ENG:  [www.youtube.com/watch?v=pGyMyJ8aCQ4](http://www.youtube.com/watch?v=pGyMyJ8aCQ4)

EXAMPLES OF THESIS

- Complete FEM modelling of a machine tool (with damping)

- Control strategies for vibration suppression in milling

- Modeling of flexible manipulators for vibration control
Workshop sessions and on field activities are held at the site locations of the companies supporting the ME8 track:

Moreover, the SIEMENS Technology Centre (TAC) in Piacenza offers to master students in Machine Tools and Manufacturing Systems the opportunity to work on state of the art CNC systems.

Siemens TAC (Piacenza):

http://w5.siemens.com/italy/web/AD/ProdottieSoluzioni/TAC/Pages/Default.aspx
• **Master Degree Thesis and Research**
  The activities connected to the thesis development can be carried out at MUSP laboratory. Machines and other equipment are available for the experimental tests. The master thesis are usually developed in cooperation with companies.

• **Thesis Awards:**

Over the years, several students that developed their thesis at MUSP won the UCIMU Awards.

Some of the awarded from the ME8 track in the 2016 edition of the UCIMU Awards.
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