

Materials Science & Engineering

Prof. Michele Pansini (e-mail:
pansini@unicas.it)

Prof. Gianfranco Dell'Agli (e-mail:
dellagli@unicas.it)

Main materials of interest of the mechanical engineer:

- Metals
- Polymers
- Ceramics

In this course the Science and the
Technology of Polymers and Ceramics
will be addressed

Science without technology is just abstraction.

Technology without science is just empiricism.

Only through the complex interplay between science and technology one will be able to gain a deep insight into the nature of materials.

Science of materials is concerned about:

- Chemical composition
- Structure
- Microstructure (Texture)

All these features influence the properties of materials

Technology of materials allows:

- To go from the raw materials to the finished goods.
- To work and modify the materials.

By tuning:

- The chemical composition
- The structure
- The microstructure

The chemical composition, structure and microstructure of materials determine their macroscopic properties (mechanical, thermal, electric, magnetic)

This course will teach you:

- The main features of ceramics and polymers.
- The properties of ceramics and polymers.
- How ceramics and polymers are produced and modified.
- How the mechanical engineer has to use ceramics and polymers in the course of his future profession.