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## Applied machine design and Computer-aided design (CAD)

### Finalità

The aim of the course is to present applicative aspects of machine design integrating basic knowledge and computer-aided tools. Students in small groups develop and document the design of a mechanical device with the creation of individual part and assembly drawings.

### Programma

The process of mechanical design

Design specifications

Material selection

The main criteria for mechanical design.

Projects according to their production processes.

Design of welded structures and parts obtained by casting.

Calculation of pressure vessels in accordance with the law.

Methods of experimental mechanics and applications to measure displacements, deformations and forces.

Testing and NDT.

Overview and examples of CAD in mechanical engineering

Spread-sheet use in computer aided design

Physical objects, models and representations

Geometric modeling of mechanical elements (solids, curves and surfaces)

CAD – spreadsheet link

Development in small groups in the design of a mechanical device with the implementation of CAD working drawings of parts and assembly, commercial part selection and a project report.

### Modalità d'esame

The exam consists of a written part on theoretical issues of the course and discussion of a project carried out in groups.

### Propedeuticità

Mechanical drawing

Mechanics of machines

Mechanical technology

Machine construction