

## 3rd YEAR IC\_SEMESTER 5 MODULE OPTIONNEL

### Practical info

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#### Location(s)

 Toulouse

## Mechanics

 ECTS  
3 crédits

 Hourly volume  
42h

## Practical info

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### Location(s)

 Toulouse

## Mechanics



ECTS  
3 crédits



Hourly volume  
40h

## Introducing

### Objectives

The student will be expected to understand and be able to explain (main concepts) the mechanics of deformable solids, the notions of stress, linearized strain, displacement fields and elasticity behaviour.

The student should be able to

- This course is intended to provide students with the opportunity to: - analyse the state of stress and strain of a solid under load.
- Calculate the stress state knowing the strain state and vice versa.
- Calculate the state of strain knowing the displacement field.
- Establish the equations for writing the local equilibrium of the solid at any point.
- Translate the boundary conditions of a model into equations.
- Propose a relevant model of a real problem, especially in terms of the boundary conditions.
- Calculate the state of stress, strain and displacement of some simple elasticity problems.
- Switch from stress fields to internal stress fields in the framework of beam theory.

equilibrium, resultants in force and moment.

## Practical info

### Location(s)

 Toulouse

## Necessary prerequisites

Basic mathematical tools, statics of rigid solids,

## Industrialisation process



ECTS  
3 crédits



Hourly volume  
39h

## Introducing

### Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

- the main types of production processes for mechanical parts,
- principles of industrialization that permit starting a 3D digital model to obtain a real mechanical part (digital process chain),
- the general approach to implement a production process.

The student will be able to:

- make the link between the Product, the Process and the Material associating the form of a part made of a given material to one or more manufacturing processes,
- describe the physical principles of a manufacturing process to produce a mechanical part.
- identify the influencing parameters of a production process

The skills assessed in this course are:

- 1\_5 mastering basic industrial techniques (industrial design, manufacturing ...)
- 3\_3 be able to use generic digital tools (ENT, programming, collaborative work ...)
- 3\_4 Define, build and operate an experiment in a critical view
- 6\_3 Knowing how to use the methods of creativity and demonstrate independence.

The skills deployed in this course are:

- 2\_5 Managing a production tool.

### Necessary prerequisites

- 1) Interpretation a digital model of a mechanical part (3D model).
- 2) Reading the specifications of a mechanical part.

## Practical info

### Location(s)

Toulouse

## Introduction to systems engineering



ECTS  
3 crédits



Hourly volume  
37h

## Practical info

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### Location(s)

 Toulouse

## [FRANCAIS] Matériaux cimentaires et Environnement



ECTS  
3 crédits



Hourly volume

## Introducing

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### Objectives

Know how Portland cement works (chemistry, hardening, etc.)

Understand the evolution of the development of mechanical performance, as well as the influential parameters.

Understand the basic notions of the physical properties of granular materials and their granulometric characterizations

Know what are the standard pathologies affecting concrete and the associated means of prevention

## Practical info

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### Location(s)

 Toulouse

## Architecture

 ECTS  
3 crédits

 Hourly volume

## Practical info

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### Location(s)

 Toulouse