

2nd YEAR IC_SEMESTER 4 INSA

Practical info

Location(s)

 Toulouse

Mathematical tools II



ECTS
5 crédits



Hourly volume
78h

Introducing

Objectives

At the end of this course, the students will be able to solve easy EDO or to predict qualitative properties of more complex ones and to implement with Python some approximative solutions.

In the probability and statistics part, the students will be able to understand hazardous phenomena, use probability modelisation and predict statistical issues through tests.

Necessary prerequisites

First year mathematics, Analyse Numérique and mathematics from first semester

Practical info

Location(s)

 Toulouse

Sizing theory



ECTS
7 crédits



Hourly volume
152h

Introducing

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts) continuum mechanics, the notions of stress, strain and displacement fields, and the constitutive relation in linear elasticity.

The student will be able to:

- Analyse the stress and strain states of a solid submitted to a loading.
- Compute the stress, given the strain and conversely.
- Compute the strain state given the displacement field.
- Write the equations of the local equilibrium.
- Propose a relevant model of a real problem with particular attention to boundary conditions.

Strength of materials: Introduction to beam theory

- Drawing internal forces diagrams for an isostatic, straight, planar beams.
- Calculate the beam strains and stresses for a few simple loads in the case of a simple section and a slender beam.
- Final objective is to learn how to analyse and design beam-like structural members or machine elements subjected to tension, compression, torsion, and bending.
- Determine the mechanical loads and motions in dynamics systems

Necessary prerequisites

Analysis, function of multiple variable, Taylor expansion, partial derivatives
Linear algebra, vectors, matrix, eigenvectors and eigenvalues
Algorithms, bases of programming in Python
Rigid solid mechanics, equilibrium, resultant force and moment.

Practical info

Location(s)

Toulouse

Conception and construction

 ECTS
8 crédits

 Hourly volume
110h

Practical info

Location(s)

 Toulouse

Communicating in Foreign Languages



ECTS

5 crédits



Hourly volume

57h

Introducing

Objectives

LV2 Module (Spanish/ German / Chinese / Portugese / French Sign Language):

The objectives defined with reference to the CERL for the 5 language skills are specific to the language studied and the student's level.

The student will be able to :

- strengthen their listening, reading and note-taking skills
- analyse and synthesise information
- organise and efficiently communicate information
- speak in front of a group
- attend or lead a job interview
- interact with another person in the foreign language

Remedial English

A module can be proposed to students in certain very specific cases, as a substitute to LV2.

Practical info

Location(s)

 Toulouse

Necessary prerequisites

Necessary knowledge:

First-year LV1, Expression and LV2 skills (D1ANHU01)

Second-year LV1 and Expression skills (I2CCGE31)

Improving one's autonomy and building one's own professional project – level 2B



ECTS
5 crédits



Hourly volume
130h

Practical info

Location(s)

 Toulouse