

## SEMESTER T1GM\_SEMESTER 7

### Practical info

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#### Location(s)

 Toulouse

## Design of structures



ECTS  
7 crédits



Hourly volume  
79h

## Introducing

### Objectives

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

The student will be able to:

Finite element module :

- Perform finite element analysis using a commercial finite element code (Abaqus for example) following the presented principles and good practice.
- Identify the features offered by these numerical tools and the associated potentialities.
- Create relevant models related to the target objectives.
- Analyse and postprocess the obtained results.
- Analyze the impact of the modeling assumptions.
- Assess the risks inherent to the wrong interpretation of the results.

Reliability and Design of experiments module :

- Apply to practical case analyses the basics of reliability
- Build a design of experiments for the modeling of a physical system from numerical or experimental data.

Mechanics of vibrations module :

- Develop a linear dynamic model of a mechanical structure: a lumped parameters model for a discrete elements structure, or a distributed parameters model for a continuous structure.
- Determine the vibrations of these structures undergoing transient or permanent excitation.

Bibliographic work module :

- Carry out a literature review and establish a state of the art on a research topic that will be developed in I4GMPJ21 formation unit.

This state of the art will present :

- past history (previous studies, de facto situation, necessity of research)
- the main results of these past studies
- The elements that could guide future work in UF I4GMPJ21.

### Necessary prerequisites

Finite element module :

Computer aided design (CAD)

Finite element concepts.

Mechanics of vibrations module :

Basics in solid mechanics, strength of material, dynamic systems.

## Practical info

### Location(s)

 Toulouse

## Manufacture



ECTS  
6 crédits



Hourly volume  
64h

## Introducing

### Objectives

The student will be able to:

Classify groups of manufacturing processes and understand the relationship between process and mechanical properties

Define the influencing parameter on cutting material  
Optimize a machining operation in HSM

Define a Production Management Approach

Design parts by casting / forge / folding

Define the advantages and limitations of additive manufacturing processes  
Design and produce plastic parts using an additive manufacturing process

Know the different ways to get rough part and their costs and performance  
Define a range of rough part and design the necessary tools

Mechanical characteristics of materials  
Resistance of materials: elasticity

Digital production chain: CAD, CAM, Post-processing, use of means of production, control

## Practical info

### Location(s)

 Toulouse

## Necessary prerequisites

CAM manufacturing technology  
Tolerance Manufacturing analysis

## Power transmission case study



ECTS

9 crédits



Hourly volume

107h

## Introducing

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### Objectives

At the end of this module, the students will be able to analyse technical requirements related to the design of a gear reducer, create a design with the associated sizing calculations, present their solution by means of both a draft and a CAD model.

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### Necessary prerequisites

Fundamentals of mechanical design:

- basics of manufacturing (welding, machining)
- common clamping technology (key, splines, screws, etc.)
- pivot joints (rolling bearings joint design and sizing)
- basics of technical drawing
- calculating forces in a mechanical system (equilibrium laws)
- calculating stresses (torsion and bending of beams)

## Practical info

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### Location(s)



Toulouse

## Improving one's autonomy and building one's own professional project level 2 S7



ECTS  
4 crédits



Hourly volume  
46h

### Introducing

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- ↳ Enrich your professional network
- ↳ Set development axes, objectives and action plans

### Objectives

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

Physical and Sports Activities

The student will be able to:

to list the problems to be solved:

↳ Know the Physical and Sports Activity (rules, meaning, roles, etc.),

↳ Design the objective of the project.

to organize:

↳ Know the constraints, the resources, and the means available,

↳ Know how to choose and plan actions over time,

↳ Know how to get involved in the group and the project: know how to adapt, dare to stimulate action, know how to give up, propose, etc.

to regulate:

↳ Know how to observe,

↳ Know how to carry out a balance sheet,

↳ Know how to readjust the choices if necessary.

Individualized Professional Project

The student should be able to:

↳ Develop your professional vision and define a strategy.

↳ Customize, present and compare your project to professionals

### Necessary prerequisites

Learning outcomes 1st, 2nd, 3rd year.

### Practical info

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#### Location(s)

 Toulouse

## [FRANCAIS] Formation Continue Tutorat Spécifique GM S1 CT1

### Practical info

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#### Location(s)

 Toulouse

## Métallurgie transfert thermique

### Practical info

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#### Location(s)

 Toulouse

## Improve your management abilities



ECTS  
4 crédits



Hourly volume  
45h

## Introducing

Management I3CCGE51

### Objectives

At the end of this module, the student will

¿ Know the legal environment and responsibilities of a business activity

¿ Be able to objectively assess the financial health of a company and evaluate the rentability of an investment

¿ Realize a market diagnosis (benchmarking) and a business diagnosis in order to make decisions and set goals and strategies

¿ Collect the market data and put in action a business plan adapted to the means and goals of the company  
Module L 2

The objectives, defined in reference to the CEFR for the 5 language activities, are specific for the language studied Chinese, German, Spanish ¿ and the level of the student.

They can be consulted on :

<https://moodle.insa-toulouse.fr/course/view.php?id=44>

In certain cases, students may be authorised to follow an English module instead of another language

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## Necessary prerequisites