

## 5th YEAR GM – SYSTEM ENGINEERING COURSES\_SEMESTER 9

### Practical info

---

#### Location(s)

 Toulouse

## Multidisciplinary design



ECTS  
4 crédits



Hourly volume  
45h

## Introducing

Probability (basic), statistics (basic), notions of system architecture (mechanical, hydraulic, electric, etc.)

### Objectives

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

Design of experiments

- To know the global concepts of DoE and understand the interest of the tool.

Surrogate models and sizing of mechatronic systems

- To explain the process and the different models useful for the optimal sizing of mechatronic systems

The student will be able to:

Design of experiments

- To be able to define and set into work some tests allowing to get an optimistic process.
- To carry out one's own design of experiments.

Surrogate models and sizing of mechatronic systems

- To define the sizing scenarios of a technical system
- To establish the estimation models and simulation modes of the set of components
- To set a design procedure and to define the optimization problem
- To Implement the calculations in a numerical environment

### Practical info

#### Location(s)

 Toulouse

### Necessary prerequisites

## Management of risks



ECTS  
5 crédits



Hourly volume  
68h

## Introducing

---

### Location(s)

 Toulouse

## Objectives

At the end of this module, the student will have understood and be able to explain the notions associated with dependability, reliability, maintenance and risk, as well as the organizations, trades, methods and activities useful to implement these notions.

The student will be able

- to identify the hindrances to the availability and to the reliability of systems,
- to make an assessment for choosing the most suitable architectures,
- to choose among the available methods the most appropriate to obtain the expected service of a system, when designing and maintaining, and to provide its insurance.

## Necessary prerequisites

System life cycle.  
Basic knowledge on probabilities.  
Statistics.  
Signal processing.

## Practical info

---

# Industrialization



ECTS  
5 crédits



Hourly volume

## Introducing

---

### Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):  
The systems of industrialization and its interfaces. The challenges of production management (PM) and supply chain (SCM) as well as issues of scheduling.

What is configuration management, what are the enablers and what is the purpose

The student will be able to:

- Have an overview on manufacturing processes
  - Understand the historical context of Industrialization
  - Have a critical view on global manufacturing strategy
  - Understand the elements on Smart Manufacturing and Industry 4.0
  - Use the information of the different types of Industrial Management Tools
  - Roughly describe airbus world (A/Cs family, industrial sharing across the Europe)
  - Define a hierarchical & appropriated breakdown of a complex product
  - Apply the change process and identify required data to allow decision
  - Identify mechanisms that enable management of product offer and its customisation
  - Demonstrate that final product manufactured is conform to expectations
- 

## Necessary prerequisites

Not applicable (no pre-requisit needed)

Reading of plans, current metallic materials, various types of machining.

Basic elements on: probabilities -Linear programming -

## Practical info

---

### Location(s)

 Toulouse

## Systems on chip



ECTS  
4 crédits



Hourly volume  
47h

## Practical info

---

### Location(s)



Toulouse

# Thermal engines and systems



ECTS  
4 crédits



Hourly volume  
56h

## Introducing

---

## Location(s)

 Toulouse

## Objectives

By the end of this module, the student should have understood and be able to analyze thermal and mechanical energy production systems and their associated components.

The student should be able to:

- Analyze the thermodynamic cycle associated with a power plant.
- Size a thermal engine to meet specifications in terms of requested power.
- Specify the components of a thermal engine or system.
- Calculate the air conditioning flow requirements to perform various functions (pressurization, fresh air renewal, heating, cooling) in an aircraft and adjust the recirculation and the flow distribution between the different cabin zones.

## Necessary prerequisites

---

Basics of thermodynamics and heat transfer.

## Practical info

---

## [FRANCAIS] Projet de recherche et propriété industrielle



ECTS  
6 crédits



Hourly volume  
74h

### Practical info

---

#### Location(s)

 Toulouse

## Human relations



ECTS

6 crédits



Hourly volume

78h

## Introducing

## Location(s)

 Toulouse

## Objectives

L'étudiant devra être capable de :

- Analyser des situations de groupe avec des concepts issus de la psychologie sociale
- Identifier les dimensions éthiques de ces situations et prendre position
- Repérer et comprendre des informations liées aux RH
- Analyser une situation de management d'équipe en référence à un cadre théorique
- Formuler et argumenter des solutions managériales
- Agir dans un milieu naturel : analyser, décider, agir ; mettre en œuvre la sécurité, utiliser du matériel spécifique. découvrir un site.
- Respecter et s'intégrer dans un environnement différent de ses habitudes
- S'engager avec cohérence dans le projet d'activités
- Prendre part activement au collectif
- Valider son projet professionnel et construire une stratégie pour trouver un emploi

## Necessary prerequisites

None

## Practical info