INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

SEMESTER 8_4th YEAR AE_THEME IS

Introducing

Description

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

Toulouse

Systems Engineering processes

ECTS
5 crédits

Hourly volume
77h

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):
What are the engineering processes to develop a system, how they must be implemented and managed in companies, what are the associated standards.

The student will be able to:
- define, capture, analyze and express the stakeholders
- needs
- transform the needs into requirements
- define several logical and physical solutions from the needs, evaluate them and choose one manage development processes

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Practical info

Location(s)

Toulouse

Object-Oriented and Real-Time Programming

ECTS
3 crédits

Hourly volume
50h

Introducing

Location(s)

Toulouse

Description

Objectives

This module consists of two parts:
- The part on real time systems introduces real time systems, key concepts, applications, constraints, and teaches the programming of these systems using the services of real time operating systems.
-At the end of the object programming part, students will be able to produce C++ code from a UML class diagram with relationships, inheritance and polymorphism.

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Practical info

Dynamics of structures and control

ECTS
4 crédits

Hourly volume
22h

Introducing

Description

Objectives

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

Vibrations of mechanical systems and structures.

Controlling the articulated systems and flexible structures.

The global and local modelling of electromagnetic actuators.

Necessary prerequisites

Basis in electromagnetism, solid mechanics and control

Évaluation

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Practical info

Location(s)

Toulouse

Mechatronic project

ECTS
4 crédits

Hourly volume

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):
- power and information channels of mechatronic systems
- the place of system simulation activities in the design cycle (V design cycle) of complex systems
- the principle of data acquisition with computers

The student will be able to:
- Establish models suitable for various engineering tasks during the design of mechatronic systems.
- Implement models in a system simulation environment and perform validation and verification tasks associated to the V design cycle.
- Specify and conduct model-in-the-loop and software-inthe-loop activities for a complex system.
- Design the different elements of a simple data acquisition system
- Implement a graphical programming language dedicated to the acquisition (LabVIEW)
- Perform a security analysis
- Perform a lifecycle analysis with a dedicated software

Necessary prerequisites

Basics of mechanics, electronics, heat transfer, and automation.
Basic of algorithmic

Évaluation

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Practical info

Location(s)

Toulouse

Non-contractual information

Research Initiating Project

ECTS
4 crédits

Hourly volume

Introducing

Description

Objectives

The module aims at motivating students with research activities through a selection of tutored projects. Each project involves a team of 6 students tutored by a researcher or an industrial partner. Those projects also benefit from a preliminary training on documentary research techniques to facilit the writing of a state-of-theart review of the domain. A course to project management techniques is also provided to guide students during the realisation phase of the project.

At the end of this module, the student wil have a practical experience of the following activities :
- identify a bibliography on a given topic, and present it through a standard formulation (IEEE form).
- write a state-of-the-art synthesis.
- precise the perimeter of the realization phase.
- apply project management and collaborative work techniques.
- write a projectif report and prepare a presentation in english for its project defense.

Évaluation

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Practical info

Location(s)

Toulouse

Quality, security, environment and sports

ECTS
4 crédits

Hourly volume
61h

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain the main principles and definitions of quality management, the importance of health and safety at work, how to assess and prevent risks, eco-design and life-cycle analysis.

The students will be able to develop their capabilities in eco design in a project related to mechatronics.

Sports:
The student will have to build a project with his team by:
- Taking into account everyone's skills,
- Seeking to enhance the strengths of each partner and compensate potential weaknesses.
- Analyzing the balance of power they will be confronted with.

Évaluation

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Practical info

Location(s)

Toulouse

Communication in organisations with LV2

ECTS
6 crédits

Hourly volume

Introducing

Description

Objectives

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

-How to answer the demand of the civil society for technical and scientific information
-How to carry out critical analysis in order to give appropriate answers when questioned about such issues
-How to consider the circulation and content of information within the organizations in which they will be hired

The classes given in English will focus on the specific linguistic characteristics of the English used in scientific contexts in order for the students to understand and master them.
The students will also be made aware of the specificities of scientific English as relates to publications in his specific field of research.

Module L 2
The objectives, defined in reference to the CEFRL 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

Necessary prerequisites

Necessary knowledge:
For classes in English : understanding of scientific English

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Practical info

Location(s)

Toulouse

Communication in organisations

ECTS
6 crédits

Hourly volume
42h

Introducing

Description

Évaluation

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Practical info

Location(s)

Toulouse

Toulouse School of Management

Introducing

Description

Évaluation

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Practical info

Location(s)

Toulouse

Political sciences semestre 2

ECTS
3 crédits

Hourly volume

Introducing

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Practical info

Location(s)

Toulouse

Non-contractual information