

SYSTEM ENGINEERING COURSES

Tutored projects	4 credits	60h
Systems Engineering processes	5 credits	76h
Dynamics of structures and control	4 credits	54h
Object oriented and real time programming	3 credits	55h
Mechatronic project	4 credits	60h
QSE and Sport	4 credits	48,75h
Communication with in organizations	6 credits	

Tutored projects



ECTS
4 credits



Component
INSTITUT
NATIONAL
DES SCIENCES
APPLIQUEES
TOULOUSE



Number of
hours
60h

Presentation

Description

The work is composed of two parts :

- * a bibliographical study dealing with a research theme in relationship with the project. This study is concluded by the writing of a document whose content and form have to follow the recommendations given by the tutors,
- * a technical realization which is performed during a full semester.

Organisation:

4 hours of documentary research teaching then 10 hours of project management teaching, then 30h of project.

Objectives

The module is aimed at motivating students with research activities by means "tutored projects" involving groups of several students and directed by an academic or an industrial tutor. Those projects are completed by a formation to documentary research. A course of project management allows guiding the realisation part of the project.

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

- * the concepts, norms and techniques related to the building of a state of the art in relationship with the subject of the project subject,
- * the concepts and techniques in relationship with the management of the project involving several persons.

The student will be able to:

- * elaborate a state of the art dealing with a domain in relationship with the project,
- * manage a project involving several persons,
- * integrate techniques of different scientific domains to reach the realization goals of the project.

Pre-requisites

Depends of the subject of the project.

Useful info

Contacts

Education manager

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Place

➤ Toulouse

Systems Engineering processes

 **ECTS**
5 credits

 **Component**
INSTITUT
NATIONAL
DES SCIENCES
APPLIQUEES
TOULOUSE

 **Number of
hours**
76h

Presentation

Objectives

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

Learn to define, gather, analyse and express the needs and expectations of

involved parties in order to design and implement a system, a product, a service.

Learn to translate the needs and expectations into technical requirements, define

and analyse technical requirements in order to design and implement a

system, a product, a service.

Useful info

Place

> Toulouse

Dynamics of structures and control

 **ECTS**
4 credits

 **Component**
INSTITUT
NATIONAL
DES SCIENCES
APPLIQUEES
TOULOUSE

 **Number of
hours**
54h

Presentation

Place

Objectives

➤ Toulouse

Vibrations of mechanical systems and structures.

Controlling the articulated systems and flexible structures.

The global and local modelling of electromagnetic actuators.

Pre-requisites

Basis in electromagnetism, solid mechanics and control

Useful info

Contacts

Education manager

SEBASTIEN SEGUY

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Object oriented and real time programming

 ECTS
3 credits

 Number of
hours
55h

Presentation

Description

The module addresses the specification and design of real time systems, an introduction to main real-time operating systems services, method to program and to test a real-time application.

Objectives

This module presents real time systems, concepts, attributes, constraints, applications and teach how to program these systems using object oriented languages and using real time operating systems.

Useful info

Contacts


Education manager

PIERRE-EMMANUEL HLADIK

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Mechatronic project

 **ECTS**
4 credits

 **Number of hours**
60h

Presentation

Objectives

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

- 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-in-the-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 (LabWIEW)
- Perform a security analysis

- Perform a lifecycle analysis with a dedicated software

Useful info


Contacts

Education manager

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QSE and Sport

 ECTS
4 credits


 Number of
hours
48,75h

Useful info

Contacts

Education manager

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Communication with in organizations



In brief

> **Number of students:** 75

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.

Presentation

Objectives

The classes given in French will focus on :

- How to react to society's demand for technical and scientific information
- How to foster critical thinking in order to give appropriate answers when questioned about such issues
- How to communicate effectively in the workplace

The classes given in English will focus on the specific linguistic characteristics of English used in such contexts in order for the students to understand and master them.

The students will also be made aware of the specificity of professional communication within the English-speaking world.

Module L2

The objectives, defined in reference to ther CEFRL for the 5 language activities, depend on the language studied - Chinese, German, Spanish - and the level of the student.

Pre-requisites

For classes in English : mastery of general English

Useful info

Contacts

Education manager

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