INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

APPRENTICESHIP 4th YEAR MECHANICAL ENGINEERING

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

Engineering 1

ECTS
4 crédits

Hourly volume
80h

Introducing

Description

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Practical info

Location(s)

Toulouse

[FRANCAIS] Transmission mécanique

ECTS
6 crédits

Hourly volume
140h

Introducing

Description

Objectives

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

The student will be able to:
Calculate electrical powers (DC/AC), induction in magnetic network, Laplace force in electrical machines.

Necessary prerequisites

Évaluation

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Practical info

Location(s)

Toulouse

Innovation and Mechatronics

ECTS
4 crédits

Hourly volume
44h

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):
-the basic and the key benchmarks regarding industrial property
-the role of the industrial property in the research and development approach and the process of innovation
-the terminology, the basic notions of the patents law

The student will be able to:
-Identify the information contained in a patent
-Get acquainted in the searches for anteriority and in the use of databases patent (Espacenet)
-Build basic requests to verify the state of the technique
-Put into practice the use of the property industrial as strategic tool for an innovative company
-Make decisions concerning industrial property : legal elements, diversity of the strategic choices, financial stakes, partnership agreements, damages of the counterfeiting
-Develop a strategy of protection of an innovation

Évaluation

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Practical info

Location(s)

Toulouse

Conduct a meeting

ECTS
4 crédits

Hourly volume
60h

Introducing

Description

Objectives

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

ENGLISH (25 teaching hours)
The main characteristics of business English, and specialised English
The skills required to pass the TOEIC test

CONDUCT A MEETING (15 hours teaching hours)
At the end of this module, the student will have understood and be able to explain (main concepts):
- Different types of meetings.
- The role of the chairperson
- The different stages of a meeting
- How to put it all together
-The principles of the interpersonal communication.
- The golden rules of group participation
- Managing stress and emotions
- Written summaries, briefs and reports

The student will be able to:
ENGLISH
- Communicate with English speakers (written and spoken English) in a professional context
- Deal with professional issues in relations with their specialization (written and spoken English)
- Understand written and spoken documents in relation with business life (TOEIC)

CONDUCT A MEETING
- Chairing a meeting efficiently from a management position
- Defining objectives and adapting the approach
- Applying his/her knowledge and personal approach to highlight his/her savoir faire and savoir être.
- Adopting the role of chairperson whilst insuring group dynamics.
- Creating varied visual documents

Necessary prerequisites

ENGLISH: B1 level minimum

CONDUCT A MEETING: none

Évaluation

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Practical info

Location(s)

Toulouse

Apprenticeship 5

ECTS
6 crédits

Hourly volume

Introducing

Description

Objectives

The apprentice should be able to:
- integrate and adapt to the company's project
- get involved in the work (initiatives, deepening)
- solve open industrial problems
- learn on their own.

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

Apprenticeship 6

ECTS
6 crédits

Hourly volume
10h

Introducing

Description

Objectives

The apprentice should be able to
- define an innovative project for the company

Beyond the technical achievement, the apprentice must also be able to:
- define the characteristics of a project and the challenges of project management, deal with the management of deadlines, costs, quality, human resources, communication, risks and purchases, present the techniques for conducting meeting.
- Put into practice the use of industrial property as a strategic tool for an innovative company

Évaluation

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Practical info

Location(s)

Toulouse

Real Fluid Mechanics

Introducing

Description

Viscous Fluid Flows :
Lectures and Tutorials
-Intro: viscosity, fluid particle, deformation, Eulerian and Lagrangian reference system
-Fundamental eqs : Conservation of Mass, Linear Momentum (Navier-Stokes eq) and Energy, dimensional analysis and similarity
-Internal flows: Analytical solution of the fundamental equations, friction factor, head losses, hydraulic circuits

Labwork: Rheology, pumps characterization, hot-wire anemometry

Objectives

This course is an advanced course that builds on the foundational concepts of heat transfer acquired in the Ideal Fluid Mechanics 1 (I3ICFT01) and Transferts Thermiques 1 (A3GMCM51-TT) course.

At the end of this course, the student should have understood and will be able to explain the basics allowing to approach a phenomenon involving real (viscous) fluids. He will be able to tackle situations involving more or less complex heat and mass transfers.
The student will also be able to conduct a numerical simulation with Ansys Fluent code.

Necessary prerequisites

It is essential to have a solid understanding of the foundational concepts taught in the

Thermodynamics

Introduction to fluid mechanics (I3ICFT01 Fluid Mechanics 1)

Transferts Thermiques 1 (A3GMCM51-TT) course.

Évaluation

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Practical info

Location(s)

Toulouse

Non-contractual information

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Vibratory Analysis 2

Introducing

Description

TP Vibrations :
- Impact hammer tests and identification of modal properties of a free structure
- Comparison of analytical and numerical (finite element) models with experimental results
- Use of vibration measurements to monitor the condition of a machine tool
- Modeling and manufacturing a small piezoelectric motor
- Simulation of gyroscopic effects for rotating shafts

Objectives

The aim of the course is to introduce the concepts of experimental vibration, in particular the handling of impact hammer tests and the vibration monitoring of machine tools. It also involves comparing analytical and numerical models with experimental results.

The student will be able to:
- by means of computer tools, design a controller that ensures a set of performance requirements for a given process

Necessary prerequisites

Students must have taken the Vibration component of EC Modélisation Mécanique 3 (A4GMMM71).

Évaluation

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Practical info

Location(s)

Toulouse

Hydraulic Transmission

Introducing

Description

The course consists of 2 parts :

- Technical analysis of hydraulic components (pumps, motors, cylinders and distribution devices).

- Analysis and synthesis of hydraulic systems: Sources - distribution - transformation architecture of hydraulic power, sizing and selection of the various components.

Objectives

The apprentice must be able to:
- define a hydraulic system architecture (integrator approach),
- pre-size and select its components, evaluate its performance (designer approach),
- take into account phenomena linked to real (viscous) fluids,

Necessary prerequisites

power, efficiency.

Évaluation

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Practical info

Location(s)

Toulouse

Improve your management abilities

ECTS
4 crédits

Hourly volume
44h

Introducing

Description

Objectives

ENGLISH
At the end of this module, the student will be able to:
* Understand and summarise technical documents in English (written and oral) linked to mechanical engineering
* Learn and apply technical vocabulary linked to mechanical engineering
* Present a technical subject in mechanical engineering

MARKETING, LAW, FINANCE
¿ 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
¿ Conduct a market diagnosis (benchmarking) and a business diagnosis in order to make decisions and set goals and strategies
¿ Collect market data and put into action a business plan adapted to the means and goals of the company

Necessary prerequisites

ENGLISH: B1 level minimum

WORKING RELATIONS WITH ANGLO/AMERICANS: None

LAW: None

FINANCIAL MANAGEMENT: Studied the « accountancy and financial analysis course »

Évaluation

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Practical info

Location(s)

Toulouse

Apprenticeship 7

ECTS
6 crédits

Hourly volume
2h

Toulouse

Introducing

Description

Objectives

The apprentice should be able to
- get involved in the company's project
- solve open industrial problems
- plan and manage your work
- team working
- open up to other technological fields.

Évaluation

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Practical info

Location(s)

Apprenticeship 8

ECTS
6 crédits

Hourly volume
15h

Introducing

Location(s)

Toulouse

Description

Objectives

- Active skills ¿ Students work on a case study prepared by the teacher. (main aspects: service provider with a growing market, requiring a larger network of agencies to develop capital)
- work groups (teams of 2 or 3 members)
- Elaboration of an economical report to be shown and commented on in front of a share holders commitee
- Discussions with trainer during course
- Use of a business plan software

Évaluation

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Practical info

Non-contractual information