INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

Option Building Physics

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

Concrete structures 1

ECTS
6 crédits

Hourly volume
68h

Introducing

Description

Objectives

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

Prominent design parts (bearing frames, foundations, bracing systems), and calculation of reinforced concrete buildings, submitted to vertical or horizontal loads.

The student will be able to:

Identify actions on the structures and environmental conditions, understand and predict the mechanical behavior of a structure, argue its technological choices (type of components and carrying systems, strength class of materials), design the various structural elements of a common construction and possess the needed basis to go further into particular domains, enrich a numerical model.

Necessary prerequisites

Structural analysis and engineering

Reinforced Concrete and prestressed concrete

Évaluation

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Practical info

Location(s)

Toulouse

Indoor building physics

ECTS
4 crédits

Hourly volume
65h

Introducing

Description

Objectives

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

- useful criteria to qualify comfort;

- basic knowledge for designing a system of heating, ventilating and air conditioning (HVAC);

- to be sensitized to energy saving in HVAC systems and to thermal code RT;

- basic knowledge to treat the sound insulation of buildings.

The student will be able to:

- To design a simple installation of heating and air conditioning;

- To analyze the operation of the elements of an air conditioning and heating installation;

- To calculate the sound insulation of a wall, the time of reverberation of a room and to propose a treatment;

- To calculate the direct and reverberated acoustic fields;

- To enrich a numerical model.

Expected skills :

design a basic HVAC installationanalyze the operation of the elements of a heating and air conditioning system ;calculate the sound insulation of a wall , the reverberation time of a room and offer treatment

Necessary prerequisites

Heat transfer and Fluid Mechanics I & II

Évaluation

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Practical info

Location(s)

Toulouse

Improve your management abilities

ECTS
4 crédits

Hourly volume
45h

Introducing

Location(s)

Toulouse

Description

Objectives

At the end of this module, the student will have understood and be able to explain :
* The basic rules of business law
* The objectives, principles and means of marketing
* The principles and procedures of financial diagnosis and / or investment
The student will be able to :
Apply principles and rules of management and law in simple situations. Take into account the parameters of the management (customer needs, cost effectiveness and legal compliance).

Évaluation

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Practical info

Quality Safety Environment, Sport

ECTS
6 crédits

Hourly volume
86h

Introducing

Description

Évaluation

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Practical info

Location(s)

Toulouse

Building networks (hot and cold water networks, aeraulics)

ECTS
5 crédits

Hourly volume
66h

Introducing

Description

Objectives

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

The hydro-thermal characteristics of a heating systemThe pressure distribution in a networkThe control strategies applied to heating systems used in buildingsHow to design indoor hot and cold sanitary water devices (Building hydraulic)How to design air devices: transport, supply (Building air devices)

The student will be able to:

- Design hydraulic and air networks by using the methods exposed during the seminars

- Analyse the behaviour of existing heating systems

- Design and size a heating system for collective housing

Necessary prerequisites

Heat transfer and Fluid Mechanics I & II

Évaluation

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Practical info

Location(s)

Toulouse

Building devices (thermodynamic devices, electricity)

ECTS
5 crédits

Hourly volume
70h

Introducing

Description

Objectives

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

- The behavior and the design of classical thermodynamic devices used in buildings. (Applied thermodynamic)

- Protection and security techniques used in houses, collective housing or industrial buildings (Electricity)

- How to determine experimentally the energy balance of heating and cooling units (Metrology)

The student will be able to:

- Name and explain the protection and security techniques used in classical buildings

- Calculate thermodynamic devices efficiency (refrigeration, cogeneration...) and draw the corresponding cycles on thermodynamic charts

- Analyse experimental data and calculate the related uncertainty

Évaluation

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Practical info

Location(s)

Toulouse