Building devices (thermodynamic devices, electricity)

ECTS
5 credits

Component
INSTITUT NATIONAL DES SCIENCES APPLIQUEES TOULOUSE

Number of hours
70h

Presentation

Description

Program:

* Applied thermodynamic

Reminder of thermodynamic basics (1st and 2nd principles), study of the devices through their cycle: vapor turbine, thermal motors, cogeneration… Power and efficiency calculations

* Electricity

Study of the C15-100 of the UTE C 15-105 guide. Analyze of various protections relating to the safety of electrical installations:

- protection of the circuits (choice of the protection apparatus adapted to a drain);

- protections of the people (modes of neutral, differential protection);

* Metrology

Metrology fundamentals, basics of uncertainty calculation, calibration. Practical application to real HVAC systems.

Organization:

Thermodynamics and Electricity : Lecture, seminar

Metrology: lecture, tutorials, lab work.

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

Useful info

Contacts

Education manager

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Place

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