

Physique du Bâtiment

Acoustic and Air Conditioning Design and Building Physics Laboratory

IDENTIFICATION

CODE : GCU-3-S2-EC-
CONCEPT
ECTS : 2.0

HOURS

Lectures : 0.0 h
Seminars : 16.0 h
Laboratory : 15.0 h
Project : 0.0 h
Teacher-student
contact : 31.0 h
Personal work : 29.0 h
Total : 60.0 h

ASSESSMENT METHOD

- project report
- defence of the project
- final examination (2h): concerns laboratory work and design project

TEACHING AIDS

- Course material given during the lessons
- Digital documents available
- User manuals for simulation software [CATT Acoustic and CODYBA]

TEACHING LANGUAGE

French

CONTACT

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AIMS

This sheet falls within the Course Unit GCU-S 5-Ph-Bat -1, "Building Physics - 1" and contributes to:

General Skills in Science for the Engineer:

- A1- Analyze a real or virtual system (or problem) [level 2]
- A2- Operate a model of a real or virtual system [level 2]
- A4- Designing a system that meets a specification [level 2]
- A6- Communicate a scientific analysis or approach with adapted situational conditions to the specialty [level 2]

Skills specific to the specialty domain :

- C15- Design and control good technical solutions for buildings in terms of thermal, airflow, acoustics [level 2]
- C23- Contribute to a multidisciplinary design of buildings (architectural interactions - soil - structure - building physics - economy - ϵ);

By mobilizing the following skills :

- B3- Interact with others, work as a team
- B4- Show creativity, innovate and undertake
- C-25 Contribute to sustainable planning and sustainable construction

By allowing the student to work and be assessed on the following knowledge:

- knowledge developed in the "acoustic" course [GCU-S6-AC]
- knowledge developed in the "air conditioning" course [GCU-S6-CL]

By allowing the student to work and be assessed on the following abilities:

- propose and analyze technical solutions in air conditioning and acoustic treatment of a building
- pre-size an air conditioning system under extreme winter and summer conditions,
- implement design methods using simulation tools,
- analyze simulation results and return results with critical mind,
- propose innovative and sustainable solutions

CONTENT

Project :

- sizing air conditioning system of a building and propose its acoustic treatment
- the interactions between the technical viewpoints are highlighted as well as the influential parameters that do not interact

BIBLIOGRAPHY

- Manuel de Conditionnement d'Air - G. Andreieff de Notbeck - PYC EDITION T1 et 2
- Manuel Pratique du Génie Climatique- Tome 1 Données fondamentales, Recknagel et Spenger - PYC Edition
- MANUEL CARRIER 1er partie Carrier International LTP New York.
- Climatisation conditionnement d'air traitement de l'air tome 1 : traitement de l'air, J.Bouteloup, Editions Parisiennes, ISBN 2-86 243 039-0
- Manuel d'Acoustique Fondamentale - Michel Bruneau - Editions HERMES ISBN 2-86601-712-9
- Frédéric KUZNIK, Cours Acoustique du Bâtiment- INSA Dpt.GCU, 2018
- Thierry Malet, Acoustique des Salles, Sono Mag, ISBN 2-85110-280-X

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- Michel Chagué, Acoustique de l'habitat, Le Moniteur, ISBN 2-281-11208-X

PRE-REQUISITE

- Heat and mass transfers in buildings,
- Elementary thermodynamics,
- Partial derivative equations,
- Fourier's Series and integrals.

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