

## **Building Acoustics**

- 1. Course number and name:** 020ACBGS5 Building Acoustics
- 2. Credits and contact hours:** 2 ECTS credits, 1x1.25 hours
- 3. Name(s) of instructor(s) or course coordinator(s):** Rafic FADDOUL
- 4. Instructional Materials:**
  - a. Building Acoustics – Michel Issa – Lectures Notes
  - b. Vigran, T. E. (2014). *Building acoustics*. CRC Press.
  - c. Ginn, K. B. (1978). *Architectural acoustics*.
  - d. Asselineau, M. (2015). *Building Acoustics*. CRC press.
  - e. Kinsler, L. E., Frey, A. R., Coppens, A. B., & Sanders, J. V. (2000). *Fundamentals of acoustics*. John wiley & sons.
  - f. Doelle, L. L. (1964). *Acoustics in architectural design*. McGill University (Canada).
  - g. Videos
- 5. Specific course information**
  - a. **Catalog description:** The aim of this course is to raise awareness among students about the issues of sound transmission in buildings, in order to ensure a better quality of life by respecting acoustic comfort requirements. The current French standards will be applied to define the acoustic performance related to each building depending on its use and exposure. Content: Generalities - The receiver - Acoustic requirements - Acoustic correction of rooms - Insulation against airborne noise - Insulation against impact noise - Insulation against equipment noise - Acoustic studies.
  - b. **Prerequisites or co-requisites:** None
  - c. **Required:** Required major course for Buildings and Engineering Management Specialty students.
- 6. Educational objectives for the course**
  - a. **Specific outcomes of instruction:**
    1. Educate and Increase Awareness: One of the key goals of this course is to educate students about the importance of sound transmission issues in buildings

and how these can impact the quality of life of inhabitants, thus promoting a higher sensitivity towards acoustic comfort requirements.

2. Practical Application of Standards: The course aims to equip students with the ability to apply current French standards in real-world situations, enabling them to define and optimize the acoustic performance of a building based on its specific use and exposure.

3. In-depth Understanding of Acoustic Solutions: The course intends to provide comprehensive knowledge about various acoustic solutions, including room-specific acoustic correction, insulation against different types of noise, and execution of acoustic studies. The goal is for students to not only understand these concepts theoretically, but also to be able to implement them effectively in practical scenarios.

**b. PI addressed by the course:**

<b>PI</b>	1.2	2.1	2.2	2.3	4.2	6.3	6.4
<b>Covered</b>	yes	yes	yes	yes	yes	yes	yes
<b>Assessed</b>							

**7. Brief list of topics to be covered:**

<b>No. Lectures</b>	<b>Content</b>
1	Introduction
2	Different sound levels and relationships ( $L_p$ , $L_i$ , $L_w$ )
2	Weighted sound level & Octave Band
2	Absorption coefficient & Reverberation Time
2	Acoustical room treatment
2	Weighted sound reduction index & Sound level Difference
2	Acoustical isolation against air born noise
2	Acoustical isolation against structure born noise & Impact noise
2	Acoustical requirement for equipment installation