Architecture (ARCH) 526

Architectural Design: Acoustics (Revision 1)

Status:	Replaced with new revision, see the course listing for the current revision
Delivery mode:	Individualized study online
Credits:	3
Area of study:	Architecture
Prerequisites:	Enrollment in the Graduate Diploma in Architecture program, or referral from the Canadian Architectural Certification Board (CACB) for individuals with a professional degree in architecture from a university outside Canada.
Precluded:	None
Faculty:	Faculty of Science and Technology

Notes:	For those students interested in pursuing a career as a registered architect, this course contributes to the RAIC Syllabus Diploma. Information about the **RAIC Syllabus Diploma** is available on the RAIC website. **Credit may be transferred for previous work considered equivalent.**

Overview

This course is intended for students in the Graduate Diploma program in Architecture, or for those international architecture graduates referred by the CACB. It examines both the theoretical and practical aspects of architectural practice in Canada. The focus of this course is on acoustic theory and practice as it pertains to architecture and design. This course will explore the physics and perception of sound, the characteristics of sound and vibration in spaces, and their place in the development of holistic design concepts. Qualitative and quantitative methods in acoustic analysis will be presented and discussed. The student will apply acoustic design criteria, methods, and materials to spaces for various activities and functions, from theatres and concert halls to open-space offices and hospitals. Issues of acoustic privacy and confidentiality and of sound reinforcement will be examined.

Outline

Part 1: Acoustics in Architectural Design, the Physics of Sound, and Physiology of Perceiving Sound and Vibration

- Unit 1: Physics of the Sound and Vibration
- Unit 2: Physiology of Hearing and Sensing Vibration
- Unit 3: Functions of Acoustics Design

Part 2: Principles and Characteristics of Sound Waves in Spaces and Designing Spaces to meet Acoustic requirements

- Unit 4: Characteristics of Sound Waves in Spaces

- Unit 5: Designing Spaces for Effective Listening
- Unit 6: Designing Spaces for Sound Isolation, Privacy, and Confidentiality

Part 3: Noise and Vibration Control in Buildings

- Unit 7: Noise Control in Buildings Including Mechanical System Noise
- Unit 8: Principles and Applications of Building Systems Vibration Control

Part 4: Sound Reinforcement Systems

- Unit 9: Public Address and Electronic Sound Amplification Systems, Telecommunications Systems, Converging Technologies, and Acoustic Considerations

Learning outcomes

1. Describe the physical, physiological, and psychological principles of auditory perception.
2. Describe the physics of sound waves in general and the characteristics of the sound waves in a variety of spatial design configurations.
3. Describe the characteristics of spaces designed for effective listening, working, learning, and other functions.
4. Describe environmental acoustics in terms of acoustic enhancement and environmental noise control.
5. Identify and describe acoustic separation systems for the design and construction of a given case study.
6. Relate the scientific principles of acoustic design to the design and construction of comfortable spaces.

Evaluation

Your work in this course will be evaluated based on five assignments. Assignments 1, 2, and 3 (worth 20% each) consist of problems and questions drawn from the units. Assignment 4 is a case study, and is worth 15% of the total course mark. Assignment 5 will cover the entire course and is worth 25% of your final grade. Your instructor will grade the assignments.

The table below summarizes this information:

Activity	Weight
Assignment 1	20%
Assignment 2	20%
Assignment 3	20%
Assignment 4	15%
Assignment 5	25%
Total	**100%**

You must achieve a cumulative grade of 67% or higher to receive credit for ARCH 526.

Materials

Egan, M. D. (2007). *Architectural acoustics*. Fort Lauderdale: Ross. (eBook)

Other Materials

The course materials also include an online study guide and course website.

Important links

- RAIC Centre for Architecture
- Graduate Diploma in Architecture
- Courses
- Fees and Funding

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 1, May 16, 2012

Updated December 8, 2024