

Faculty of Engineering & Technology

Acoustics and Ultrasonic Engineering

Information :

Course Code : COM 531

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Specialization of Electronics & Communication

Area Of Study :

- Understand fundamental physical quantities and nature of sound.
- Understand the idea of the sound level meter, and the human auditory system.
- Understand sound propagation indoors and outdoors, point sources and linear sources.
- Understand the concept of reverberation time, environmental correction factor K2.
- Understand sound absorption & sound insulation, and microphone.
- Understand sound spectrum and frequency analysis.
- Understand the concept of silencers, muffling devices, and loudspeakers.

Description :

Plane and spherical waves, Simple and compound sound sources, Dynamically analogous mechanical and acoustical circuits, Acoustic transducers, Loudspeakers: types and systems, Microphone: types and systems, Measurements of sound, Acoustics and Hearing, Acoustic environment outdoors, Acoustic environment indoors, Ultrasonic applications.

Course outcomes :

a.Knowledge and Understanding: :

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| 1 - | Demonstrate knowledge and understanding of concepts and theories of Acoustics and Ultrasonic Engineering. |
| 2 - | Illustrate and describe solving techniques of sound propagation indoors and outdoors. |
| 3 - | Illustrate and describe theorems for designing ultrasonic applications. |
| 4 - | Identify problems affecting the performance of sound absorption & sound insulation, and microphone. |

b.Intellectual Skills: :

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| 1 - | Ability to define and analyze different ultrasonic systems. |
| 2 - | Ability to apply different acoustical and ultrasonic solutions. |
| 3 - | The ability to select acoustical and ultrasonic systems according to system requirement and customer needs. |
| 4 - | Evaluate the performance of different acoustical and ultrasonic systems. |

c.Professional and Practical Skills: :

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| 1 - | Designing different acoustical systems. |
| 2 - | Designing different digital ultrasonic systems. |
| 3 - | Test the performance of different acoustical and ultrasonic systems. |

d.General and Transferable Skills: :

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| 1 - | Collaborate effectively within teams |
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2 -	Communicate effectively.
3 -	Effectively manage tasks, time, and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction, Nature of sound, fundamental physical quantities	5	3	2
The Sound Level Meter, Human auditory system	10	6	4
Sound Propagation indoors and outdoors. Point sources, Linear sources.	10	6	4
Noise screens, Reverberation time, Environmental correction factor K2	10	6	4
Sound absorption & Sound insulation	10	6	4
Microphones	10	6	4
Sound Spectrum and frequency analysis	10	6	4
Silencers, Muffling Devices, an Loudspeakers	10	6	4

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Laboratory

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final exam	40.00		
o Electronic and computer Lab Experiments	10.00		
o In Class Quizzes and participations	20.00		
o Mid-Term Exams	30.00		

Recommended books :

Heinrich Kuttruff, Acoustics: An Introduction, Taylor & Francis, 2007