FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

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: :	
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: :	
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: :	
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: :	
1 -	Collaborate effectively within teams

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
ÅFinal 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