

COURSE SYLLABUS

1. Course Number and Name

ARCE 675
SOUND & VIBRATION CONTROL

2. Credits and Contact Hours

Semester Credit-Hours: 3
Lecture Hours per Week: 3
Laboratory Hours per Week: 0

3. Instructor's or Course Coordinator's Name

Brian A. Rock, Ph.D., P.E., F.ASHRAE

4. Textbook Title, Author, and Year

Industrial Noise Control – Fundamentals and Applications, Second Edition, Lewis H. Bell and Douglas H. Bell, Marcel Dekker, Inc., 1993 [ISBN 0-824-79028-6].

a. Other Supplemental Materials

Handouts

5. Specific Course Information

a. Catalog Description

An introduction to the physics and measurement of sound, wave phenomena, acoustics, and methods of noise and excessive vibration control for various applications.

b. Prerequisites or Co-requisites

PHSX 212 and MATH 220 or MATH 320, or consent of instructor.

c. Required, Elective, or Selected Elective Course

Elective

6. Specific Goals

a. Specific Outcomes of Instruction

To introduce students to fundamentals of wave phenomena and measurement of sound and vibrations, and to study engineered methods for reducing noise and unwanted vibrations.

b. Student Outcomes (Criterion 3)

ABET Specified Student Outcomes		√
3(a)	Ability to apply knowledge of mathematics, science, and engineering	√
3(b)	Ability to design and conduct experiments, as well as analyze and interpret the data	
3(c)	Ability to design a system, component, or process to meet desired needs	√
3(d)	Ability to function on multi-disciplinary teams	
3(e)	Ability to identify, formulate, and solve engineering problems	√
3(f)	Understanding of professional and ethical responsibility	
3(g)	Ability to communicate effectively	
3(h)	Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
3(i)	Recognition of the need for, and the ability to engage in life-long learning	
3(j)	Knowledge of contemporary issues	
3(k)	Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	

7. Course Topics

1. Introduction
2. Physics of Acoustics
3. Sound Spectrum and Levels
4. Noise Characteristics
5. Sound Propagation
6. Instrumentation and Data Collection
7. Sound Absorbing Materials
8. Acoustical Enclosures
9. Silencers
10. Reverberation Control
11. Vibration Control
12. Applications, e.g. HVAC, engines, buildings, environmental
13. Possible tours of acoustical test labs {e.g. Ruskin's}
14. Examinations

Date Revised: February 28, 2018