

ARCE 675
SOUND & VIBRATION CONTROL
COURSE SYLLABUS

- Catalog Description:** **ARCE 675:** Sound & Vibration Control (3). An introduction to the physics and measurement of sound. Wave phenomena, acoustics, and methods of noise and excessive vibration control for various applications. Prerequisite: PHSX 115, PHSX 212, EECS 220, or consent of the instructor.
- Course Objective(s):** 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.
- Course Categories:** **ABET Category:** Engineering Topics
ARTS Form Category: Engineering Design
- Course Schedule:** **Semester Credit Hours:** 3
Lecture Hours Per Week: 3
Laboratory Hours Per Week: 0
- Prerequisite(s):** **Specific Area(s) Of Knowledge:** Two semesters of college physics, or the equivalent
Specific Skill(s): A good understanding of physical phenomena other than sound
Prerequisite(s) Satisfied By The Following KU Course(s): PHSX 115, PHSX 212, or EECS 220
- Textbook(s):** Industrial Noise Control – Fundamentals and Applications, Second Edition, Lewis H. Bell and Douglas H. Bell, Marcel Dekker, Inc., 1993 [ISBN 0-824-79028-6].
- Other Material(s):** None
- Reference(s):** *ASHRAE Handbook*
- Course Topics:**
1. Introduction (1 class {Tuesday & Thursday course})
 2. Physics of Acoustics (3 classes)
 3. Sound Spectrum and Levels (2 classes)
 4. Noise Characteristics (2 classes)
 5. Sound Propagation (3 classes)
 6. Instrumentation and Data Collection (2 classes)
 7. Sound Absorbing Materials (3 Classes)
 8. Acoustical Enclosures (2 classes)
 9. Silencers (1 class)
 10. Reverberation Control (2 classes)
 11. Vibration Control (4 classes)
 12. Applications, e.g. HVAC, engines, buildings, environmental (6 classes)
 13. Possible tours of acoustical test labs {e.g. Ruskin's} (1-2 classes)
 14. Hour and Final Examinations (2 classes + final exam period)

ARCE 675
Sound & Vibration Control
Course Syllabus (Continued)

Course Contribution to Meeting the Professional Component: This course provides knowledge or practice in areas necessary to satisfy Criterion 4 of ABET 2000, the Professional Component:

CURRICULAR AREAS	√
Mathematics	
Basic Science	
General Education	
Engineering Science	
Engineering Design	√

Relationship of Course to Program Objective:

This course supports the Program Educational Objective. The course assists in preparing students for professional engineering practice in the analysis, design, construction, and management of building systems, or for graduate study.

Relationship of Course to ABET-Specified Outcomes:

ABET SPECIFIED 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 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.	√

Course Coordinator: Brian A. Rock, Associate Professor of CEAE

Date: September 29, 2006