

INSTRUCTORS:

Dr. Lily Wang
101A PKI Building, 554-2065, lwang4@unl.edu
Office hours: Thursdays 2:30-4:30 PM and by appointment

LECTURES:

MW 9:30 – 10:45 AM, 387 PKI Building

PREREQUISITES:

AE 3300, Building Acoustic Fundamentals (or equivalent)

REQUIRED TEXTBOOKS:

Noise Control: From Concept to Application – Colin H. Hansen (Taylor and Francis, NY, 2005)

A Practical Guide to Noise and Vibration Control for HVAC Systems – Mark E. Schaffer (ASHRAE, 2005)

COURSE WEBPAGE:

Login from <http://myuno.unomaha.edu/> using your Lotus Notes username and password.

PROGRAM OUTCOMES:

The University of Nebraska architectural engineering faculty and advisory committee expect graduates will have demonstrated the following abilities, knowledge, and attitudes:

1. A solid understanding of **math, science, and engineering fundamentals** and the **ability to apply this knowledge** to the areas of structural, mechanical, acoustical, lighting, and electrical building systems; complemented by a **balanced, well-rounded general knowledge**.
2. An ability to **analyze engineering problems and design creative solutions to these problems**.
3. The **technical knowledge** of buildings, the engineered systems within, and the integration of these systems in a total building context.
4. An **attitude** of being a dedicated, enthusiastic, self-motivated problem solver, eager to learn, and with a passion for buildings.
5. An ability to **communicate** effectively, orally, graphically, and in writing.
6. An ability to **work effectively on an interdisciplinary team** of building professionals with an understanding and appreciation of each member's roles and responsibilities.
7. An understanding and appreciation of **current professional practice** and the importance of ethics and integrity in the building industry.

Advanced Noise Control – Syllabus

COURSE OBJECTIVES:

This course will focus on the following abilities, knowledge, and attitudes:

1. Reinforce the previously learned math, science, and engineering fundamentals and then apply this knowledge to the area of noise control in buildings.
2. Analyze and design creative solutions to noise control problems in buildings.
3. Further the student's technical knowledge of noise control in buildings, particularly how these techniques are integrated into the building.
5. The ability to communicate effectively, orally and through writing. Students will write project reports as well as give oral presentations on their results.
7. An understanding and appreciation of current professional practice. Students will be exposed to how the design of noise control systems fits into current professional practice.

TENTATIVE LECTURE TOPICS:

- I. Review of Noise Control Fundamentals
- II. Simple Acoustic Sources
 - a. Monopoles, dipoles, quadrupoles
 - b. Nearfield versus farfield radiation, directivity patterns
- III. Sound Power
 - a. Sound power determination from sound intensity, surface vibration or sound pressure measurements
 - b. Sound power estimation
- IV. Noise Control in HVAC Systems
- V. Vibration
 - a. Measurement
 - b. Isolation/absorbers
- VI. Acoustic Enclosures and Barriers (Sound-Structure Interaction)
- VII. Muffling Devices
- VIII. Other Topics as time permits: Outdoor Sound Propagation, Active Noise Control

GRADING POLICIES:

The final grade for the class will be based on the following:

Homework	18%
Class Participation/Attitude	2%
Projects (2)	20%
Quizzes	20%
Midterm Exam	15%
Final Exam	25%
Total	100%

You may view your grades for this course at any time on the course webpage!

HOMEWORK and PROJECTS

- Homework assignments will be handed out in class, as well as posted on the web page.
- Laboratory experiments will be run in groups, assigned by the instructor; however, lab reports are to be written individually.
- Homework and lab reports are due at the **beginning of class** on the due date.

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- Late homework or lab reports received between the beginning and end of class on the due date are penalized 10%.
- Late homework or lab reports received between the end of class on the due date and the beginning of the next scheduled class are penalized 20%. After that, late work will not be accepted, and the student will receive 0 on that assignment.
- Details on the lab experiments and report format will be provided at a later date.

QUIZZES

- Short closed-book quizzes will be given approximately every two weeks on reading assignments and understanding of lecture material.

Final letter grades are assigned based on the system shown below:

98-100	A+
94-97	A
91-93	A-
88-90	B+
84-87	B
81-83	B-
78-80	C+
74-77	C
71-73	C-
68-70	D+
64-67	D
61-63	D-
0-60	F

POLICY ON ACADEMIC DISHONESTY:

Academic dishonesty, such as in the form of cheating or plagiarism, will be dealt with according to the rules and regulations set forth in the UNO Student Handbook. Please feel free to study and discuss class concepts with your other classmates, but **do not claim someone else's work as your own**. Any incident of academic dishonesty associated with this course will result in the student receiving an automatic grade of 'F' for the course.