

AE 309**ARCHITECTURAL ACOUSTICS**

[v.1 11 January 2010]

SEMESTER Spring 2010

<u>CLASSHOURS</u>	Lectures -	Tuesday, Thursday	9:05 - 9:55	135 Reber
	Practicums	309.01 Tuesday 309.02 Thursday	1:25 - 3:20 1:25 - 3:20	108 Sackett 108 Sackett
	Office Hours -	Tuesday, Thursday Appointments	11:00-1:00	214 Engineering A

TEXT Egan, M. D. (1988), Architectural Acoustics. McGraw Hill, New York (Required)

<u>INSTRUCTOR</u>	Moses D.F. Ling, P.É., R.A.	Teaching Assistants
	Associate Professor 214 Engineering A mosesling@psu.edu	

<u>GRADING</u>	Practicum, Exercises, Assignments, Quizzes	15%
	Project One	10%
	Project Two	15%
	Exam I	20%
	Exam II	20%
	Exam III	20%
		100%

GUIDELINES All work must be submitted in 8 1/2" x 11" format. (Lined tablets or engineering calculation pads). NO tear-out spiral note paper, please! Drawings should be folded or reduced uniformly to conform to this format. Quality of presentation should be emphasized.**Attendance is expected.** Practicums and quizzes will not be made up without official excuses or just cause.

Practicum work should be completed individually and turned in during the assigned class period. Collaborative learning is encouraged. Work must be neat and presented in orderly fashion.

As much as possible, arrange to see the instructor during office hours. Contact faculty on campus only. Email is an acceptable means of communication. Typically, email is read daily. Email will be used to communicate information to the class. At the instructor's discretion, answers to emails may be distributed to the entire class.

LATE WORK Late work will not be accepted except in emergency or circumstances beyond the control of the student. Please notify the instructor or teaching assistants of any conflict well in advance.ACADEMIC INTEGRITY Academic integrity is expected. Refer to policy 49-20 in the University's Policy and Rules for Students.

Test booklets in this course are the property of the Department. Testing, and subsequent review of graded exams, will be limited to the classroom only. At no time shall the tests be removed from the classroom by a student.

COURSE NOTES This course is taught with the aid of Power Point slides. Copies of the lecture outlines are available on ANGEL. Lecture outlines are posted in advance as much as possible.

COURSE OBJECTIVES AND ASSESSMENTS

This Course is intended to familiarize architectural engineering students to certain principles relevant to the practice of acoustics in architectural settings. This course is not intended to be mathematically intensive. A more in depth course is offered in AE 458. The learning process will include:

READINGS:

- The text is a very comprehensive source of information on the material being studied. Students shall become familiar with the reading material prior to the lectures.
- Assessment: Student will be responsible for the reading material. Students will be asked to demonstrate understanding of the material by examination questions.

LECTURES:

- Students are expected to be present for all lectures. Personal interaction between the faculty and student is important. Comments and questions are welcome. Students shall plan their schedules in advance to be present and attentive in class. Assessment: The exam will be based largely on the information discussed in the lecture.

LEARNING READINESS, REFLECTIVE AND APPLICATION EXERCISES:

- Assignments may be provided prior to some lectures directing students to investigate certain aspect of the built environment. After class, students shall enter reflective and application oriented narratives to further the learning experience.
- Assessment: As part of the review process students will write reflections and possible applications. Work must demonstrate sincere efforts.

PRACTICUMS AND QUIZZES:

- Practicum exercises are designed to reinforce the lecture material. The students shall become familiar with computational methods for quantifying acoustical performance.
- Assessment: The practicum exercises will be reviewed and graded by the beginning of the next week. Students may retrieve their papers from the instructor's office. Student will be given a quiz at the beginning of the next practicum on the material learned the previous practicum.

PROJECTS:

- Student shall demonstrate an understanding of the principles and appropriate applications.
- Assessment: Appropriateness of the application, students' effort and creativity will form the basis of the evaluation.

EXAMS:

- Exams reflect material discussed in class, the text and practicum exercises.
- Student shall demonstrate clear understanding of the material, including definition of technical terms.
- Assessment: Student shall have a clear understanding of concepts and terminologies, and able to provide definitions and concise explanations. Student shall be able to complete calculations similar to exercises presented in class and practicums. Students may be presented problems in examinations that test the students' understanding and ability to apply the material in slightly different context.

STUDENT INITIATIVE:

- The most important ingredient in a learning situation is the initiative of the student. Students are expected to be inquisitive. Questions are welcomed. Email is an acceptable forum for inquiry. Email responses may be distributed to the entire class at the discretion of the instructor.

AE 309 ARCHITECTURAL ACOUSTICS - SYLLABUS - Spring 2009

LECTURE	DATE	LECTURE TOPIC	READING;Egan	PRACTICUM	LOCATIONS
1.1	12-Jan	Introduction	Ch. 1	Research Performance Centers	
1.2	14-Jan	Basic characteristics of sound	p.12-20		
2.1	19-Jan	Simple calculations	p.21-36	Logarithms/Decibels	108 Sackett
2.2	21-Jan	Measurement of sound		Logarithms/Decibels	108 Sackett
3.1	26-Jan	Absorption	p. 38-66	Measurements	108 Sackett
3.2	28-Jan	Absorption	p. 69-80	Measurements	108 Sackett
4.1	2-Feb	Reverberation time	p. 81-92	Tour (Tentative)	108 Sackett
4.2	4-Feb	Room Acoustics	p. 91-111	Tour (Tentative)	108 Sackett
5.1	9-Feb	Room Acoustics	p.111-170	Reverb time	108 Sackett
5.2	11-Feb	Review for Exam I		Reverb time	108 Sackett
6.1	16-Feb	Open (AE309 evening exam)		AE309 Exam I	TBA
6.2	18-Feb	Open (AE372 exam)		AE372 Exam I	101 Alt/108Sac
7.1	23-Feb	Acoustic calculations		Project 1 Work Session	TBA
7.2	25-Feb	Acoustic calculations		Project 1 Work Session	TBA
8.1	2-Mar			Project 1 Review	108 Sackett
8.2	4-Mar	Sound transmission loss		Project 1 Review	108 Sackett
S P R I N G B R E A K					
9.1	16-Mar	Sound transmission loss	Ch. 4	TL and STC	108 Sackett
9.2	18-Mar		Ch. 4	TL and STC	108 Sackett
W A S H I N T O N D C T R I P (19-21 March)					
10.1	23-Mar	Impact noise	Ch. 4 to p.245	TBA	
10.2	25-Mar	Outdoor Design		TBA	108 Sackett
11.1	30 Mar	Speech privacy	P. 246-258	TBA	101 Alt/108Sac
11.2	1-Apr	Speech privacy	Ch. 6	TBA	TBA
12.1	6-Apr	Mechanical equipment noise	Ch. 5	TBA	TBA
12.2	8-Apr	Mechanical equipment noise		AE309 Exam II (Evening)	
13.1	13-Apr	5 th year thesis presentation		TBA	TBA
13.2	15-Apr	Electronic sound system	Ch. 7	AE372 Exam	TBA
14.1	20-Apr	System Integration		TBA	TBA
14.2	22-Apr	No Class (PACE Seminar)		TBA	TBA
15.1	27-Apr	Project 2 Presentation		Exam III [Evening]	
15.2	29 Apr	Project 2 presentation		Project 2 Presentation	108 Sackett
				Project 2 Presentation	108 Sackett
				Thesis Kick-off Lecture	
Please note that the schedule will be adjusted as necessary.					
Project 1:		Washington DC Trip Journal (poster)			
Project 2		Architectural and acoustical design project			
Exam 1*	11-Feb	Lectures 1.1 to 6.1		Practicum	
Exam 2**	6 Apr	Lectures 9.1 to 10.2		Evening Exam	
Exam 3	22 Apr	Lectures 1.1 to 15.2		Evening Exam	