AE 202 **INTRODUCTION TO ARCHITECTURAL ENGINEERING CONCEPTS**

SEMESTER FALL 2008

CLASSHOURS				
	Lectures	Tuesday, Thursday	8:00-9:15	262 Willard
	Practicums	202.01 Tuesday	9:45-11:00	109 Osmond
		202.02 Thursday	9:45-11:00	108 Henderson
	Office hours	Tuesday, Thursday	2:30-4:00	214 Engineering A

TEXT Stein, Reynolds, Grondzik and Kwok, Mechanical and Electrical Equipment for Buildings (MEEB). 10th edition, Wiley, New York
Lindeburg, Michael R. (2001), Engineering Economic Analysis – An Introduction, Professional Publications, Inc., Belmont, California

INSTRUCTOR Moses D.F. Ling, P.E., R.A.
Assistant Professor
214 Engineering A
863-3416

Teaching Assistant
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GRADING

Exam I	12.5%	Exercises	5%	Project One	5%
Exam II	12.5%	Quizzes	5%	Project Two	5%
EXAM III	12.5%			Project Three	15%
EXAM IV	12.5%			Project IV	15%

The scoring of the course will be calculated based on the distribution outlined above. The distribution may be proportionally adjusted if any of the assignments is not assigned. Regardless of the final score, *a student must have an average exam grade of 60% to pass the course.*

GUIDELINES All work must be submitted in 8 ½" x 11" format. (Lined tablet or engineering calculation pads). NO tear-out spiral notebook paper, please! Drawings should be folded or reduced uniformly to conform to this format. Quality of presentation should be emphasized.

Attendance is expected. Quizzes will not be made up without an official excuse. Practicum and assignment work should be completed individually. Typically practicum exercises should be turned in during the assigned class period. Collaborative learning is encouraged. However, it should be stressed that learning is an individual accomplishment. Work must be neat and orderly.

As much as possible, arrange to see the instructor during office hours. Messages may be left at the Department mailbox, 104 Engineering A. Contact faculty members on campus only.

Email is an acceptable means of communication with the instructor. Typically, email is read daily. Email and ANGEL will be used to communicate information to students. Please use your PSU email account and not an outside account. If Angel is used to communicate to the instructor, please copy the instructor's email account as well. At the instructor's discretion, responses may be broadcast to all students. Identity of the inquirer will be protected when appropriate.

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 conflicts well in advance.

INTEGRITY **Academic integrity is expected**. Refer to policy 49-20 in the University's Policy and Rules for Students. Plagiarism and cheating are serious offenses and may result in a zero grade for the examination, paper or project; failure of the course; and/or expulsion from the University. Test booklets in this course are the property of the Department. Testing, and subsequent review of graded exams, will be limited to the classroom and faculty office only. At no time may a student remove the tests from the classroom.

NOTES This course is taught with the aid of Power Point slides. Students are responsible for note taking in class. As a studying tool, lecture outlines have been developed to facilitate learning. Lecture outlines will be posted on ANGEL Touching up the notes after class is an important component of note-taking.

AE202 INTRODUCTION TO ENVIRONMENTAL CONTROL SYSTEMS – FALL 2008

LECTURE	DATE	LECTURE TOPIC	PRACTICUM	Comments
1.1	26 Aug	Introduction to AE	Introduction	
1.2	28 Aug	Personal Development	Introduction	
2.1	2-Sep	Psychrometrics	Psychrometry	
2.2	4-Sep	Thermal Comfort	Psychrometry	
3.1	9-Sep	Solar Environment	Solar Film	
3.2	11-Sep	Passive Solar	Solar Film	
4.1	16-Sep	Passive Solar	Project 1 Work Session	
4.2	18-Sep	Heat Transfer	Project 1 Work Session	Exam I
5.1	23-Sep	Thermal Gradient	Heat Transfer	
5.2	25-Sep	Heat Loss	Heat Transfer	
6.1	30-Oct	Heat Loss	Heat Loss	
6.2	2-Oct	Energy Estimating	Heat Loss	Project 1 due
7.1	7-Oct	Energy Code	Energy	
7.2	9-Oct	Fire Safety	Energy	
8.1	14-Oct	Fire Safety	Project 2 Work Session	
8.2	16-Oct	Principal of Fire Protection	Project 2 Work Session	Exam II
9.1	21-Oct	Code	TBA	
9.2	23-Oct	Code*	TBA	
10.1	28-Oct	Career Fair	Career Fair	
10.2	30-Oct	Fire Protection Systems	Project 3 Work Session	
11.1	4-Nov	Fire Alarm Systems	Project 3 Work Session	
11.2	6-Nov	Storm	Project 3	Project 3 due
12.1	11-Nov	Storm	Project 3	
12.2	13-Nov	Sustainability	Project 4 work session	Exam III
13.1	18-Nov	Engineering Economics	Project 4 work session	
13.2	20-Nov	Engineering Economics	Project 4 work session	
	T H	A N K S	G I V I N G	
14.1	2-Dec	Engineering Economics	Project 4 work session	
14.2	4-Dec	Engineering Economics	Project 4 work session	
15.1	9-Dec	Engineering Economics	Engineering Economics	
15.2	11 -Dec	Engineering Economics	Engineering Economics	

Please note that the schedule will be adjusted as necessary.
Reading may be directly related to lectures or simply serve as supplemental information.
There are far more relevant than can be presented in one course. Students are expected to maintain a curiosity regarding the subject and are encouraged to explore the subject beyond the basic class work.

Project 1	2 Oct Rolling		Psychrometry Exercise	
Project 2	Deadline		Heat Transfer Exercise	
Project 3	6 Nov		Fire/building project	
Project 4	4 - 13 Dec		Coordinate with ARCH130A final project	
Exam 1	18 Sep	6:45 - 8:00	Lecture 1.1 to 3.2	TBA
Exam 2	16 Oct	6:45 - 8:00	Lecture 4.2 to 7.1	TBA
Exam 3	13 Nov	6:45 - 8:00	Lecture 7.2 to 12.1	TBA
Exam 4		Finals Period	Lecture 13.1 to 15.2	

COURSE OBJECTIVES AND ASSESSMENTS

This Course is intended to familiarize architecture engineering students to certain principles relevant to the profession, particularly building environmental control systems. This course is not intended to be mathematically intensive. More in-depth curriculum is offered in upper level courses. The learning process will include:

READINGS:

- The text is a rather comprehensive source of information on the topics being studied. Students shall become familiar with the reading material prior to the lectures. Other references will be used to supplement the text as appropriate.
- Assessment: Student will be responsible for the reading material. Students may be asked to demonstration understanding of the material by examination questions.

LECTURES:

- Students are expected to attend all lectures. Personal interaction between the faculty and student is important. Far more information is conveyed during lecture than the lecture outline suggests. Comments and questions during the lecture are welcome. Students shall plan their schedule in advance to be present and attentive in an 8 am class. Reading of newspaper and other non-attentive activities are impolite and shall be avoided. Students shall exhibit professional conduct at all times.
- Assessment: The exams will be based on the information discussed in the lecture. Questions may be specific to the discussion in class.

LEARNIG READINESS, REFLECTIVE AND APPLICATION EXERCISES:

- Assignments are provided prior to some lectures directing students to investigate certain aspect of the built environment. After class, students should enter reflective and application oriented narratives to further the learning experience.

PRACTICUMS AND QUIZZES:

- Practicum exercises are designed to reinforce the concepts presented in lecture. The students shall become familiar with computational methods for quantifying building performance and engineering economics.
- Assessment: The work sheets will be collected at the end of each practicum session. The papers may be retrieved by the end of the week at the faculty's office. Solutions to the practicums will be posted on ANGEL at the end of each week. Quizzes will be given Tuesday in class. Bring your clicker.

PROJECTS:

- Students shall demonstrate understanding of the principles and appropriate applications.
- Assessment: Projects will be graded on appropriateness of the application, students' effort and creativity will form the basis of the evaluation, the appropriateness of the product as a complete architectural/engineering response.

EXAMS:

- Exams are based on material discussed in class, the text, projects and exercises.
- Student shall demonstrate a clear understanding of the material, including definition of technical terms.
- Assessment: Student shall be able to complete calculations similar to exercises presented in class and in the practicums. Student shall have a clear understanding of concepts and terminologies, and able to provide definitions and concise explanations. Student shall be able to demonstrate the understanding of the concepts by application of the principle in unfamiliar context.

STUDENT INITIATIVE:

- The most important ingredient in a learning process is the initiative of the student. Students are expected to be inquisitive and self-motivated. 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.
- Assessment: Completion of the project assignment and meeting the minimum requirements stated would result in an acceptable grade of 80%. Demonstration of additional initiatives is necessary to earn addition credits.

Expected outcomes (ABET assessment):

a. An ability to apply knowledge of mathematics, science and engineering: (2 - Moderate)
Assessments: The degree to which students understand and can perform the analysis is tested specifically in Exam II.

b. An ability to design and conduct experiments as well as analyze and interpret data: (2 - Moderate)
Assessment: The results of the analysis and experimentation are demonstrated by Exercise I – Psychrometry.

c. An ability to design a system, component or process to meet desired needs: (3 -Strong)
Assessment: the degree of success is evaluated based on Project IV outcome.

d. An ability to function on multi-discipline teams: (1 - Little)
Assessment: Students' ability to work in a team environment is assessed by the instructor as well the team members. Peer evaluations are used as data collection means.

e. An ability to identify, formulate and solve engineering problems: (2 - Moderate)
Assessment: Project 2 is designed to meet this goal. Project solutions are graded for appropriateness, creativity and soundness relative engineering principles. Data will be collect in Project 2 – Heat Transfer Exercise.

f. An understanding of professional and ethical responsibility: (1 - Little)
Assessment: Peer evaluations are used to address personal ethical practice and behavior.

g. An ability to communicate effectively: (2 - Moderate)
Assessment: Each student will be evaluated on individual performance during oral presentations.

h. The broad education necessary to understand the impact of engineering solutions in the global and societal context: (1 - Little)
Assessment: The sustainability and professional development modules will address pressing contemporary issues, such as globalization and sustainability.

i. A recognition for the need for, and the ability to engage in life long learning: (1 - Little)
Assessment: The project assignments will engage students in independent research and extra curricular learning.

j. A knowledge of contemporary issues: (2 - Moderate)
Assessment: The personal and professional development modules will address contemporary issues.

k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice: (2 - Moderate)
Assessment: Project assignments will require the use of modern engineering tools. The engineering economics module (Exam 4) will be used to evaluate this outcome.