

MECHANICAL ENGINEERING PROGRAM

ABET COURSE SYLLABUS

ME 418: Air Conditioning Engineering Systems(3 credits): Elective Course

Course Description (2008-2010 Catalog):

Analysis and design of air conditioning systems, load calculations, system selection, duct sizing, and controls. Relationships between internal and external environments. Development of economic, functional and energy conserving concepts in air conditioning design

Prerequisite Course: ME311

Prerequisite by Topic:

- Knowledge of thermodynamic properties
- Knowledge of first law of thermodynamics for open systems and its applications
- Basic knowledge of various heat transfer modes

Textbook: Heating, Ventilating, and Air Conditioning: Analysis and Design, McQuiston/Parker/Spitler, 6th edition, J. Wiley

Other Reference Material: N/A

Course Coordinator: Samir Moujaes, Professor

Course Objectives:

- A. Perform basic psychrometric calculations and designate HVAC air processes on the charts.
- B. Perform necessary calculations to determine overall heat transfer coefficient of different wall/glass sections and piping surfaces.
- C. Perform necessary design heating load calculations for a variety of building conditions.
- D. Perform cooling load calculations given a variety of building conditions.
- E. Layout and select the necessary piping and pump sizes needed for a water cooled/heated system.
- F. Select the necessary air registers to meet the overall comfort requirements in a conditioned space.

Relationship of Course to Mechanical Engineering Program Educational Outcomes:

Goal 1:	Goal 2:	Goal 3:
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Provide mechanical engineering graduates with technical capabilities.						Prepare the mechanical engineering graduates to have effective workplace skills.				Instilling a sense of responsibility as a professional member of society.			
1.a	1.b	1.c	1.d	1.e	1.f	2.a	2.b	2.c	2.d	3.a	3.b	3.c	3.d
M		H		M	H	L	L		M	L		M	M

(L)ow (M)edium (H)igh

Topics Covered:

1. Air Conditioning systems survey
2. Moist Air Properties and conditioning processes
3. Heat Transmission in Building Structures
4. Space heating load
5. Space Cooling Load
6. Flow, Pumps and Piping Design
7. Space Air Diffusion

Laboratory Projects: None

Assessment of Student Progress toward Course Objectives

Six take home exams, one design project, one computer project and final exam

Class/Laboratory Schedule: T,Th 4:00-5:15, SP09

Contribution of Course for meeting Professional Component:

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| (a) Mathematics and basic sciences: | 0 credit |
| (b) Engineering Topics (Design/Science): | 3credit |
| (c) General Education: | 0 credit |
| (d) Others: | 0 credits |

Prepared By:

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Date:

September 24, 2009