

MECHANICAL ENGINEERING PROGRAM

ABET COURSE SYLLABUS

ME 415: Design of Thermal Systems (3 credits): Elective Course

Course Description (2008-2010 Catalog):

Design of thermal systems and subsystems, especially as they relate to current and new means of energy utilization and power generation; computer simulation and optimization of thermal systems based on performance and economic constraints.

Prerequisite Course: EGG 307, ME 311, 314, 380

Prerequisite by Topic:

- Engineering Economics
- Engineering Thermodynamics
- Engineering Heat Transfer
- Fluid Mechanics

Textbook: Design Analysis of Thermal Systems, R. Boehm, J. Wiley

Other Reference Material: N/A

Course Coordinator: Robert Boehm, Distinguished Professor

Course Objectives:

- Review pertinent prerequisite topics emphasizing design aspects
- Emphasize applications of various devices and software used in thermal systems design
- Working in a group, perform a major open-ended design project that uses costing as a key element
- Give oral and written reports on a regular basis

Relationship of Course to Mechanical Engineering Program Educational Outcomes:

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

(L)ow

(M)edium (H)igh

Topics Covered:

1. Selection of fluid flow equipment in practical designs
2. Heat exchange options in design
3. Fitting of physical data and solving equations numerically
4. Economic evaluation techniques
5. Preliminary cost estimation
6. Availability analysis
7. Introduction to optimization techniques
8. Outline of some commercial software
9. Major group design project

Laboratory Projects: None

Assessment of Student Progress toward Course Objectives

Regular oral reports, midterm exam, final group project

Class/Laboratory Schedule: MW 4:00-5:15 (Spring Semester)

Contribution of Course for meeting Professional Component:

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

Prepared By:

Robert Boehm

Date:

September 24, 2009