MECHANICAL ENGINEERING PROGRAM

ABET COURSE SYLLABUS

ME 443: Design Techniques in Mechanical Engineering (3 credits): Elective Course

Course Description (2008-2010 Catalog):

Computational techniques for use in mechanical engineering design. Emphasis on the use of existing commercial codes for the analysis and design of machine elements and for the study of heat transfer and fluid flow.

Prerequisite by Topic:

- Mechanics of Materials
- Fluid Mechanics

Textbook: A First Course in Finite Element Method Using ALGOR (2nd edition), Daryl L. Logan, PWS Publishing Company.

Other Reference Material:

Personal handouts, available on the course web site (http://www.me.unlv.edu/~mbt/320/320.html)

Course Coordinator: Mohamed Trabia, Professor

Course learning outcomes:

i Decide when it is the right time to use finite element analysis instead of mechanics of material equations.
ii. Select the appropriate element type for the mechanical component you are designing.
iii. Develop a finite element analysis model of a mechanical component.
iv. Develop the ability to inspect finite element analysis results critically.

Relationship of Course to Mechanical Engineering Program Educational Outcomes:

Goal1: 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		**M**	**H**	**H**	**M**			**M**				

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

Topics Covered:

i Understand the basic theory of finite element analysis.
ii. Develop finite element equations for different systems.
iii. Apply the knowledge gained in steps (i) and (ii) to commercial finite element software to solve real-life design problems.

Laboratory Projects: None

Class/Laboratory Schedule: 75 minutes lecture two sessions per week

Assessment of Student Progress toward Course Objectives

Two written exams, homework, one project, and final exam

Class/Laboratory Schedule: MW 10:00-10:50 AM (Spring Semester)

Contribution of Course for meeting Professional Component:

(a) Mathematics and basic sciences:	2 credit
(b) Engineering Topics (Design/Science):	1 credit
(c) General Education:	0 credit
(d) Others:	0 credits

Prepared By:	**Date:**
Mohamed Trabia	March 14, 2010