ME 4041 Interactive Computer Graphics and Computer-Aided Design (Elective)

Catalog Description: ME 4041 Interactive Computer Graphics and Computer-Aided Design (3-0-3)
Prerequisites: ME 3180 Machine Design and ME 3345 Heat Transfer
Principles of geometric modeling, finite element method, and interactive computer graphics hardware and software. CAD and CAE applications in thermal and mechanical design problems. Design projects.

Textbooks: *Mastering CAD/CAM*, I. Zeid, McGraw-Hill, 2005

Topics Covered:

1. Introduction
2. Features of CAD/CAE/CAM Systems
3. Geometric Modeling
4. General Processes of Finite-Element Procedure
5. Finite-Element Theory
6. Practical Aspects of Modeling
7. Computer Graphics

Course Outcomes:

Outcome 1: To explain the basics of Geometric Modeling, Computer Graphics.

1.1 Students will demonstrate an understanding of the basic concepts of geometric modeling and computer graphics.

Outcome 2: To explain the theory behind the Finite Element Method (FEM) and to provide insight into the practical aspects of FEM.

2.1 Students will demonstrate an understanding of the theory and practical aspects of FEM.

Outcome 3: To develop skills in the design and analysis of practical engineering problems through the integration of geometric modeling, FEM and computer graphics.

3.1 Students will demonstrate their ability to design and analyze practical engineering problems using geometric modeling, FEM and computer graphics.

Outcome 4: To gain hands-on experience with commercial CAD/CAE packages.

4.1 Students will demonstrate their expertise in the use of commercial CAD/CAE packages in practical engineering applications.

Outcome 5: To underscore the differences between numerical and closed-form approaches to engineering problems.

5.1 Students will demonstrate their knowledge of the differences between closed-form and numerical approaches to engineering problems.

Correlation between Course Outcomes and Program Educational Outcomes.

ME 4041												
	Mechanical Engineering Program Educational Outcomes											
Course Outcomes	a	b	c	d	e	f	g	h	i	j	k	l
Course Outcome 1.1	X										X	X
Course Outcome 2.1	X				X						X	X
Course Outcome 3.1	X		X	X	X	X					X	X
Course Outcome 4.1	X										X	
Course Outcome 5.1	X				X	X					X	

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