

Mechanical Engineering Program: ABET Course Outcomes

Course: EN1750 – Advanced Mechanics of Solids

Instructor: Professor Guduru

Revision Date: Fall 2009

Course Description: Theoretical and computational concepts and techniques in continuum mechanics of deformable solids and its application to the mechanical response of machine and structural elements. Elasticity, plasticity, viscoelasticity. Finite element method. Elastic stress and analysis, plane stress and plane strain, stress concentrations. Principle of virtual work and variational theorems.

Prerequisite: EN0310

Outcomes:

On completion of EN1750, students shall

1. Understand the mathematical and physical foundations of the continuum mechanics of solids, including deformation and stress measures; constitutive relations; failure criteria; have the ability to pose and solve boundary value problems involving deformable solids; and understand the basis for numerical methods in solid mechanics.

Addresses ABET outcomes (a), (e)

Assessment: Assignments, Examinations, student survey.

2. Be proficient in the use of a modern finite element analysis program (ABAQUS/CAE) for analyzing stress, deformation and failure in components, assemblies and structures.

Addresses ABET outcome (k)

Assessment: Assignments, student survey.

3. Possess the ability to apply the principles of solid mechanics to solve engineering problems and to design systems or components to meet desired needs; including (a) to idealize a system or component for the purposes of stress analysis; (b) to use appropriate numerical and analytical techniques to model the system (c) to interpret and draw appropriate conclusions from the results and (d) present results and conclusions clearly in the written and oral presentations.

Addresses ABET outcomes (c), (e), (g), (k)

Assessment: Final project, student survey

Mechanical Engineering Program – ABET course outcomes student survey

Course: EN1750 – Advanced Mechanics of Solids

Outcomes: Please rate your understanding of, and ability to apply, the knowledge and skills listed in the outcomes for this course.

	Weak			Proficient	
1 Theory	1	2	3	4	5
2 FE analysis	1	2	3	4	5
3 Application to engineering	1	2	3	4	5

Course Evaluation: Please rate the various components of this course in helping you develop and apply the knowledge and skills listed in the course outcomes.

1: Solid Mechanics Theory					
	Not helpful			Very helpful	
Lectures	1	2	3	4	5
Homework	1	2	3	4	5
Exams	1	2	3	4	5
Project	1	2	3	4	5

2: FE analysis					
	Not helpful			Very helpful	
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

3: Application to engineering design					
	Not helpful			Very helpful	
Lectures	1	2	3	4	5
Homework	1	2	3	4	5
Exams	1	2	3	4	5
Project	1	2	3	4	5

ADDITIONAL COMMENTS: Please use the space provided below (and overleaf) to provide more detailed comments on this course. Detailed comments are particularly important if you feel that some aspects of the course did not meet their goals.