Course Title	**Strength of Materials**				
Course Code	**MME 257**				
Course Type	Compulsory				
Level	Undergraduate				
Year / Semester	2nd year / 4th Semester				
Teacher's Name					
ECTS	5	Lectures / week	3 hours	Laboratories / week	8 hours total
Course Purpose and Objectives	The aim of the course is to enhance the students' knowledge on the basic principles of the strength of solid materials for the understanding of failure mechanisms, the assessment of the stresses in simple structural members, and the deformation of beams and shafts.				
Learning Outcomes	• Determine normal and shear stresses in metallic plates and shells. • Explain the failure theories of metals and other solid materials. • Explain the effect of column buckling. • Calculate stresses in structural problems involving combined load conditions. • Estimate stress concentrations at geometric discontinuities. • Understand the applicability of energy theorems in the stress analysis in linear elasticity quasi-static problems.				
Prerequisites	MME 256	Required	None		
Course Content	The material being taught in this course extends from MME 256 and covers course material related to the evaluation of stress concentrations and residual stresses, stress evaluation in composite members and structures, flexural loading of beams and shafts, buckling of slender bodies and structures, uniform loading of metallic plates, shells and pressure vessels, and a brief outline of the energy theorems and methods, and the failure criteria involved in (elastic-perfectly plastic) metals, ceramic, polymers and fibrous materials. **Laboratory Exercises** • Buckling • Photo-elasticity (stress flow, stress concertation)				
Teaching Methodology	• Class lectures (whiteboard, PowerPoint) • Course-supporting lectures • Communicative, Collaborative • During the first week of the semester, the course syllabus is given to students, which includes information on the course content, expected learning outcomes, assessment and office hours.				

Bibliography	• Nash, W.A., *Schaum's outline of theory and problems of strength of materials*. McGraw-Hill. • Bower, A.F., *Applied Mechanics of Solids*. ISBN-13: 978-1439802472. • Beer, F.P., E.R. Johnston, J.T. DeWolf and D.F. Mazunek, *Mechanics of Materials*. McGraw-Hill. • Morrow, H.W. and R.P. Kokernak, *Statics and strength of materials*. Prentice Hall. • Spiegel, L. and G.F. Limbrunner, *Applied statics and strength of materials*. Prentice Hall.
Assessment	• Midterm exams (x2) 46% • Final exam 44% • Laboratory 10%
Language	Greek