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Department of Civil Engineering	
Mechanics of Materials (61207)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Statics (67211) OR Statics (61110) P2 : Calculus III (21201)

Course Contents

Topics covered in this course are fundamental principles and theories of stress and strain, and their interrelationship, mechanical properties of materials, pressure, influence of temperature, shear and bending forces and stresses, flexural and compound stresses, maximum and minimum strains, deflection of beams, stability of columns

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Ability to calculate for different components of normal and shearing stresses in members subjected to axial, transverse forces, torsion and bending moments.	A	50 %
2	Ability to analyze for deformations (strains) and deflections of rods, shafts, and beams.	E	35 %
3	Ability to transform the stresses and strains from plane to plane and finding principal stresses using equations and Mohrs circle.	E	10 %
4	Ability to analyze the stability of columns.	E	5 %

Textbook and/ or Refrences

R. C. Hibbeler, Mechanics of Materials 8th Edition, Pearson Education, 2011

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Quizzes	5 %
Homeworks	5 %
Final Exam	50 %

Course Plan

Week	Topic
1	Introduction
2-3	Stress: 1.1-1.7: F1-6, 1-1b, 1-18, 1-23, 1-27, F1-7, F1-10, 1-46, 1-49, 1-61 Strain:, 2.1,2.2: F2-1, 2-10, 2-11, 2-21, 2-25
4-7	Mechanical Properties of Materials 3.1-3.7: F3-11, F3-12, 3-22, F3-16, 3-33 Axial load:4.1-4.6: F4-1, F4-5, 4-33, 4-46, 4-69 Torsion: 5.1-5.5: F5-6, F5-7, 5-18, 5-56, 5-79 First Exam
8-11	Bending: 6.1-6.5: F6-3, F6-14, 6-43, 6-62, 6-110 Transverse Shear:7.1-7.5: F7-4, 7-15, 7-16, 7-23, F7-7, 7-42, 7-65 Combined Loadings: 8.2: F8-1, F8-6, 8-48, 8-59, 8-63
12-13	Stress Transformation: 9.1-9.4: F9-5, F9-6, 9-19, 9-22, F9-11, 9-83 Strain Transformation:10.1-10.3: 10-2 Second Exam
14-15	Deflection of Beams and shafts:12.1-12.2, 12.5-12.7: F12-6, 12-15, 12-22, 12-103, 12-110 Buckling of Columns:13.1-13.3: F13-3, 13-18, 13-19, 13-39
16	Final Exam