AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY
COLLEGE OF ENGINEERING
Department of Mechanical Engineering

Course Information	
Course Code and Name:	ME 216 Mechanics of Materials
Credit Hours**:**	**3 (**3 Lecture + 1 Tutorial)
Prerequisites:	GE 103 Engineering Graphics and Design, GE 201 Statics, ME 211 Materials Science and Engineering ME 213 Mechanics of Materials Lab (Co-requisite)

Course Description
Normal and shear stress, normal and shear strain, stress-strain relations for ductile and brittle materials, yield and ultimate stress, elasticity and plasticity, Hooke's law, Poisson's ratio. Axial loading, stress on inclined planes. Torque and torsion, deformation of circular bars under torsion, polar moment of inertia. Pure shear and pure bending, Euler's beam theory, curvature and bending moment, second moment of inertia, normal and shear stress in beams of various cross-sections. Plain stress and strain, Principal and maximum shear stress and strain, Mohr's circle, and general 3-D stress-strain relationship in elasticity, buckling of columns.

Textbook			
Title	Mechanics of Materials		
Authors	Timothy A. Philpot		
Publisher	Wiley (USA)	Year and Edition	2014, Third Edition

Course Contents
Stress
Strain
Mechanical Properties of Materials
Design Concepts
Axial Deformation
Torsion
Axial Deformation
Bending
Shear Stress in Beams
Beam Deflection
Statically Indeterminate Beams
Stress Transformations
Strain Transformations.
Thin-Walled Pressure Vessels.

Academic Coordinator	**Signature**
Dr. Mahmoud Ahmadein	M. Ahmadein

Official Stamp