



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

Course Information	
Course Code and Name:	ME411 Mechanical Behavior of Materials
Credit Hours:	3 (3 Lecture + 1 Tutorial)
Prerequisites:	ME 216 Mechanics of Materials

Course Description
Studies of stresses and strains in two- and three-dimensional elastic problems. Failure theories and yield criteria. Analysis and design of load-carrying members. Energy methods and stress concentrations. Elastic and plastic behavior. Fatigue and fracture, and Composite materials.

Textbook			
Title	Mechanical Behavior of Materials: Engineering Methods for Deformation, Fracture, and Fatigue		
Authors	Norman E. Dowling		
Publisher	Prentice Hall	Year and Edition	4 <sup>th</sup> Ed., 2012

Course Contents
Introduction to Materials failure
Structure and Deformation in Materials
A survey of Engineering Materials
Yielding and Fracture under Combined Stresses
Fracture of Cracked Members
Fatigue of Materials (Introduction and Stress-Based Approach)
Plastic Deformation Behavior and Models for Materials
Stress Strain Analysis of Plastically Deforming Members
Time-Dependent Behavior: Creep and Damping

Academic Coordinator	Signature
Dr. Mahmoud Ahmadein	



Official Stamp