Kulliyah	Engineering
Department	Manufactruring and Materials Engineering
Programme	Manufacturing Engineering
Course Title	Mechanics of Materials
Course Code	MEC 2111
Status	Core
Level	2
Credit Hours	3 Hours Lecture
Prerequisite	MEC 1103
Co-requisites	
Teaching Methodology	Lectures
Method of Evaluation	Assignments10%Quizzes10%Tutorials05%Mid-term exam30%Final exam45%
Instructor(s)	Dr. Qasim Hussain Shah Office at Room#272 Tel: 603-2056-4472 Email: hqasim@iiu.edu.my
Offered Semester	Semester II, 2004/2005
Objective	 To develop in the students the ability to analyze a given problem in a simple and logical manner, and to apply to its solution, a few fundamental and well understood principles. To provide the students with basic concepts of mechanics of materials and the usage of simplified models. To enable the students to develop all the necessary formulas in a rational and logical manner and to clearly indicate the conditions under which they may be safely applied to the analysis and design of actual engineering structures and machine components.

Course	Introduction to Stress and Strain. Elastic and plastic properties of
Synopsis	Materials. Axial, Bending, Torsion, and combined loading of the
	structures. Shear Stress. Stress transformations. Mohr's Circle.
	Principal Stresses. Shear force and bending moment in beams.
	Deflection of beams and shafts. Buckling of Columns. Impact loading.

Week	Topics	Reading
		Assignment
		(Chapters)
1	Equilibrium of deformable bodies, Concept of Forces,	1
	moments, and stresses. Normal Stress, Shear Stress.	
2,3,4	Deformation, Stresses and Strains, Tension Test, Stress-	2,3,4
	Strain Diagram, Stress-Strain behavior of Ductile and	
	Brittle materials, Hook's Law, Strain Energy, Poisson's	
	Ratio, The Shear Stress-Strain Diagram, Saint-Venant's	
	Principle, Thermal Stresses, Stress Concentration.	
5	Shaft under Torsion, Torsion Formula, Power	5
	Transmission, Angle of Twist, Residual Stress.	
6	Shear Force and Bending moment diagrams, Graphical	6
	method to find our shear force and bending moment,	
	Bending deformation, The flexure formula, Curved beams.	
7	Shear in straight members, The shear formula, Shear	7,8
	Stresses in beams, Shear flow in built up members, Shear	
	flow in thin-walled members, Stresses due to Combined	
	loading.	
8,9,10	Plane stress transformation, General equations of plane	9,10
	stress transformation, Principal stresses and maximum	
	inplane shear stress, Mohr's Circle for plane stress, Stress	
	in shafts due to axial and torsional loads, Plane strain,	
	Plane strain equations, Mohr's Circle for plane strain,	
	Strain rosettes.	
11	Deflection of beams and shafts.	12
12	Buckling of Columns, Critical load, The Secant formula.	13
13,14	External work and strain Energy, Elastic strain energy for	14
	various types of loading, Conservation of energy, Impact	
	loading.	

References	Hibbler R.C. Mechanics of Materials SI Ed., Prentice Hall
Required	2003.
Recommended	Beer, F.P. & Jhonston, E.R., Mechanics of Materials, 3rd
	Ed.(metric Units) McGraw-Hill 2002.
Proposed	Nov. 29, 2004
Start Date	

Effective	
for the	
Batch of	
Students	