



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

Course Information	
Course Code and Name:	ME471 Introduction to Finite Element Method
Credit Hours:	3 (3 Lecture + 1 Tutorial)
Prerequisites:	MATH 226 Linear Algebra, MATH 345 Numerical Methods

Course Description
Virtual formulation, Finite element analysis: shape formation, equilibrium conditions, element classification, and assembly of elements, modeling methodology. Structures and elements: trusses, beams, 2-D solids, 3-D solids, axisymmetric solids, thin-walled structures. Dynamic analysis. Heat transfer and thermal analysis.

Textbook			
Title	An Introduction to the Finite Element Method		
Authors	J.N. Reddy		
Publisher	Mcgraw Hill Series in Mechanical Engineering	Year and Edition	3 <sup>rd</sup> Ed., 2005

Course Contents
Introduction to finite element analysis
Direct stiffness approach: Spring elements
Bar and truss elements
Introduction to differential equations and strong formulation
Principle of minimum potential energy and weak formulation
Finite element formulation of linear elasticity
The constant strain triangle
The quadrilateral element
Practical considerations in FEM modelling
Convergence of analysis results
Higher order elements

<b>Academic Coordinator</b>	<b>Signature</b>
Dr. Rashid Khan	



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