Jordan University of Science and Technology

Faculty of Engineering

Civil Engineering Department

CE534 Introduction To Finite Element - JNQF Level: 6

Second Semester 2023-2024

Course Catalog
3 Credit Hours. This class serves as an introduction to the linear finite element method, and its application to static and dynamic problems with an emphasis on solid mechanics. The first half of the course will use the stiffness approach to developing the finite element equations as applied to bars, beams and Frames. The second half of the course will focus on developing the finite element method as one that is applicable as a general numerical method for solving ordinary and partial differential equations that arise in solid mechanics. Some sessions will focus on applying Matlab programm or the commercial code Ansys or Abaqus to various problems in solid mechanics
Teaching Method: Blended

Text Book	
Title	A first course in the finite element method
Author(s)	Daryl L. Logan
Edition	5th Edition
Short Name	Ref#1
Other Information	2012

Instructor	
Name	**Prof. YASMEEN OBEIDAT**
Office Location	-
Office Hours	
Email	ytobeidat@just.edu.jo

Class Schedule & Room

Section 3:
Lecture Time: Mon, Wed : 11:30 - 12:30
Room: C5025

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
234310	CE431 Structural Analysis (2)	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction to finite element methods	
Weeks 3, 4	Stiffness (displacement) method	
Weeks 5, 6	Development of truss equations	
Weeks 7, 8, 9	Development of beam equations	
Weeks 10, 11	Development of frame and grid equations	
Weeks 12, 13	Development of the plane stress and strain stiffness equations,	
Weeks 15, 16	Modelling on system level	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To identify, formulate, and solve engineering problems using the finite element method [1PI-1a] [1L6K1, 1L6K2, 1L6S2]	40%	
To apply knowledge of mathematics, science, and engineering to the analysis of simple elastic structures using the finite element method [1PI-1a, 1PI-6a] [1L6K1, 1L6K2, 1L6S2, 1L6C4]	30%	
to analyze complex problems in solid mechanics using commercial FEM software [1PI-7a] [1L6C1]	30%	

Relationship to Program Student Outcomes (Out of 100%)											
PI-1a	PI-2a	PI-2b	PI-2c	PI-2d	PI-3a	PI-4a	PI-4b	PI-5a	PI-6a	PI-6b	PI-7a
55									15		30

Relationship to NQF Outcomes (Out of 100%)				
L6K1	L6K2	L6S2	L6C1	L6C4
20.83	20.83	20.83	30	7.5

Date Printed: 2024-06-23