



Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE733 Finite Element Method (1) - JNQF Level: 6

Second Semester 2023-2024

Course Catalog

3 Credit Hours. The primary objective of this course is to teach in a unified manner the fundamentals of the finite element method for the analysis of engineering problems arising in solids and structures. The course will emphasize the solution of real-life problems using the finite element method underscoring the importance of the choice of the proper mathematical model, discretization techniques and element selection criteria. Finally, students will learn how to judge the quality of the numerical solution and improve accuracy in an efficient manner by optimal selection of solution variables.

Teaching Method: On Campus

Instructor

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

Class Schedule & Room

Section 1:
Lecture Time: Mon, Wed : 10:00 - 11:30
Room: C3017

Tentative List of Topics Covered

Weeks	Topic	References
	Topic 1	
Weeks 1, 2	Introduction to the Finite Element Method (FEM)	
Weeks 3, 4	FEM Discretization and Review of the Direct Stiffness Method	
Weeks 5, 6	Mathematical Formulation of Finite Elements	
Weeks 7, 8	Plane Stress Problem	

Weeks 9, 10, 11	The Isoparametric Representation	
Weeks 11, 12	Shape Function Magic	
Weeks 13, 14	FEM Convergence Requirements	
Weeks 15, 16	Computer Implementation and Modelling of the Finite Element Method	

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%	First exam, Second exam, Final
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%	First exam, Second exam, Final
To analyze complex problems in solid mechanics using commercial FEM software [1PI-7a] [1L6C1]	30%	Second exam, Final

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

Evaluation	
Assessment Tool	Weight
First exam	30%
Second exam	20%
Final	50%

Date Printed: 2024-10-26