Jordan University of Science and Technology

Faculty of Engineering

Mechanical Engineering Department

ME703 Computational Techniques In Mech. Eng. - JNQF Level: 9
First Semester 2023-2024

Course Catalog
3 Credit Hours. Nonlinear algebraic equations, sets of linear algebraic equations, eigenvalue problems, interpolation, curve fitting, ordinary differential equations, and partial differential equations, solution of partial differential equations of the parabolic, elliptic and hyperbolic type. Applications include fluid mechanics, gas dynamics, heat and mass transfer, thermodynamics, vibrations, automatic control systems, kinematics, and design. .

Text Book	
Title	Numerical Methods for Engineers and Scientis
Author(s)	Joe Hoffman
Edition	2nd Edition
Short Name	Text Book
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 1	Applied Numerical Methods with Matlab for Engineers and Scientists	Chapra, S. C	4th Edition	
Ref 2	Numerical Methods for Engineering Application,	Joel H. Ferziger	2nd Edition	

Instructor	
Name	**Prof. Mohamed Al-Fandi**
Office Location	M5 L2
Office Hours	
Email	mohamed_alfandi@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Tue : 10:30 - 13:30 Room: LAB 1

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Apply numerical methods to obtain approximate solutions to nonlinear and linear systems of algebraic equations, integration, differentiation, ODEs, and PDEs [1L9S1, 1L9S2]	50%	Midterm, Assignments, Final
Implement numerical techniques into data representation through curve fitting for various types of data [1L9S1]	20%	Midterm, Assignments, Final
Ability to use compliers or packages, such as MATLAB and COMSOL in performing numerical computations [1L9S1]	20%	Midterm, Assignments, Final
Demonstrate understanding of numerical techniques and how they are used in real-life applications by employing them in mechanical engineering case studies [1L9S2]	10%	Assignments, Final

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7

Relationship to NQF Outcomes (Out of 100%)	
L9S1	L9S2
65	35

Evaluation	
Assessment Tool	**Weight**
Midterm	20%
Assignments	30%
Final	50%

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