Jordan University of Science and Technology

Faculty of Engineering

Electrical Engineering Department

EE305 Numerical Methods For Engineers - JNQF Level: 7
Summer Semester 2023-2024

Course Catalog
3 Credit Hours. Machine epsilon. Round-off error. Nonlinear equations. Zeros of polynomials. Least squares data fitting. Interpolation. Numerical integration. Ordinary and partial differential equations. One dimensional optimization.
Teaching Method: Blended

Text Book	
Title	Numerical Methods for Engineers
Author(s)	Chapra S. and Canale R.
Edition	6th Edition
Short Name	Ref 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 2	Numerical Methods for Engineers and Scientists	A. Gilat & V. Subramaniam,	3rd Edition	

Instructor	
Name	**Dr. Amer Magableh**
Office Location	E2 L-3
Office Hours	
Email	ammagableh@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue : 10:00 - 11:30
Room: C3015

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
822030	HSS203MATH Ordinary Differential Equations	Prerequisite / Study
902030	MATH203 Ordinary Differential Equations	Prerequisite / Study
2001140	NE114 Programming For Engineers	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to Numerical Methods	
Week 2	Sources of Errors in Numerical Methods	
Week 3	Sources of Errors in Numerical Methods	
Week 4	Root Localization-Bracketing Methods	
Week 5	Root Localization-Open Methods	
Week 6	Root Localization-Multiple Nonlinear Equations	
Week 7	Least Squares Fitting	
Week 8	Least Squares Fitting	
Week 9	Interpolation-Polynomial	
Week 10	Interpolation-Spline	
Week 11	Matlab Programming	
Week 12	Numerical Integration	
Week 13	Numerical Integration	
Week 14	Numerical Differentiation	
Week 15	Differential Equations-RK methods	
Week 16	Matlab Review	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
The student will recognize the fundamentals of numerical techniques including those in root finding, linear systems, curve fitting, integration, differentiation, and ODEs [1SO1] [1L7K1]	30%	

The student is to apply useful computing techniques for solving general and practical engineering problems [1SO1] [1L7K1]	20%	
The student to show the ability to use programming skills such as MATLAB [1SO1] [1L7K1]	25%	
The student to recognize the importance of quantifying numerical errors in application of real life applications [1SO1] [1L7K1]	25%	

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

Relationship to NQF Outcomes (Out of 100%)
L7K1
100

Evaluation	
Assessment Tool	**Weight**
First	30%
Second	30%
Final	40%

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