



Philadelphia University

Faculty of Engineering and Technology

Department of Computer Engineering

First Semester 2019/2020

Course Details:

Title:	Engineering Analysis II (0630262)
Prerequisite:	Engineering Analysis I (650260)
Credit Hours:	3 credit hours (approximately 44 contact hours)
Textbook:	“Applied Numerical Methods with MATLAB for Engineers and Scientists”, by Steven Chapra. Third Edition 2012
References:	“Numerical Methods Using Matlab”, by J. Mathews and K. Fink 4 th ed. 2004 “Advanced Engineering Mathematics”, Erwin Kreystzig, 10 th ed. 2011.
Course Description:	This course introduces students to the various numerical methods used for solving mathematical problems such as: non-Linear equations, systems of linear equations, numerical integration and differentiation, solution of differential equations, and curve fitting techniques.
Website:	http://www.philadelphia.edu.jo/academics/m_salman/
Instructor:	Dr. Mohammed Mahdi Email: m_selman@philadelphia.edu.jo Office: Engineering building, room 6726, ext: 2154 Office hours: MON. WED. 11:15 – 12:45

Course Outlines:

Week	Topic
1	Introduction
2	Error Calculation and Analysis
3 4	Solution of Non-Linear equation: Bisection, False position, Newton Raphson
5 6 7	System of Linear equations: Matrix Review Eigenvalues and Eigenvectors Gauss-Seidel Iterations
8	Interpolation: Lagrange, Newton
9	Curve Fitting: Least square, Linearization
10 11	Numerical Integration: Trapezoidal, Simpson
12 13	Differential equations: Euler, Heun’s, midpoint (Runge-Kutta)
14	Numerical Derivative
15	Review.
16	final exam

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, the student should:

1.	Understand the role of numerical methods in engineering	1, 2
2.	Understand the errors present in numerical calculations	1
3.	Solve non-linear equations and Solve systems of linear equations numerically	1
4.	Apply curve fitting techniques to a set of data points	1
5.	Perform numerical integration and differentiation	1
6.	Solve Differential equations numerically	1

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Sub-Exams: The students will be subjected to two scheduled written exams, first exam and second exam during the semester.

Quizzes: (4) Quizzes of (10-15) minutes will be conducted during the semester.

Final Exam: The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading policy:

First Exam	20%
Second Exam	20%
Quizzes	20%
Final Exam	40%
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Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.

Sept. 2019