Course name: EE202 Engineering Mathematics II	Department: Electrical and Electronics Engineering				Semester
					4
	Methods of Education				Credit (ECTS)
	Lecture	Study Time	Homework	Exam (incl. Prep.)	Total	6
	56	90	20	14	180	

Language	English
Compulsory/Elective	Compulsory
Prerequisites	EE201
Course Contents	Introduction to MATLAB, Floating Point, Errors, Complex numbers, Taylor series, Roots of Polynomials, Approximation of Functions, Numerical Differentiation and Integration, Numerical Solution for Ordinary Differential Equations
Course Objective	Student learns MATLAB and numerical tools to solve a mathematical problem and the points those effects the accuracy of the result, gains an ability to use computer tools for numerical works.
Learning Outcomes and Competences	Students will be able to ▪ Learn how to use MATLAB ▪ Learn numerical methods with MATLAB to solve engineering problems
Textbook and /or References	**Main textbooks:** 1. Numerical Methods for Engineers and Scientists 3rd Ed., Amos Gilat, Vish Subramaniam, Wiley, 2013 2. Applied Numerical Methods With MATLAB, 3rd Ed., Steven C. Chapra, McGraw-Hill 2011 3. MATLAB: An Introduction with Applications 5th Ed., Amos Gilat, Wiley, 2014

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	40
	Quizzes		
	Homework		
	Projects		
	Laboratory work		
	Other		
	Final Exam	X	60

Instructors	Prof. Dr. Niyazi ŞAHİN, Prof. Dr. Gülnihal MERAL, Dr. Öğr. Üyesi Nuray ÖKTEM

Weekly Schedule	
Week	**Subject**
1	Introduction to MATLAB (Using MATLAB, Basic Commands, Arrays)
2	Plotting 2-D and 3-D graphics with MATLAB, Polar plot, Contour Plots
3	Using Script Files and Managing Data with MATLAB, User-Defined Functions and Function Files, Symbolic Mathematics with MATLAB
4	Floating Point, Errors (Round-off, Truncation, Error Propagation), Complex Numbers, Taylor and Maclaurin Series
5	Root Finding (Bracketing Methods: Bisection, False Position; Open Methods: Newton Raphson) and MATLAB Applications
6	Roots of Polynomials (Müller, Bairstow)
7	Polynomial Interpolation (Lagrange's Method, Newton's Method, MATLAB Applications)
8	Curve Fitting: Least Squares Method (Linear, Polynomial, Non-Linear, MATLAB Applications)
9	**Mid-term Exam**
10	Approximation of Functions: Newton's Divided Difference and Lagrange Polynomials
11	Numerical Differentiation, Backward-Forward Euler and Central Difference Formula
12	Numerical Integration: Trapezoidal Rule, Simpsons Rules (1/3, 3/8)
13	Numerical Integration: Romberg, Richardson's Extrapolation, Gauss Legendre Integration
14	Numerical Solution for Ordinary Differential Equations: Heun's Method, Euler Method
15	Numerical Solution for Ordinary Differential Equations: Runge-Kutta Method