II Year I Semester

	L	T	P	C

Code: 20EC3201　　　　　　　　　　　　　　　　　　**1　0　2　2**

MATLAB FOR ENGINEERS

Course Objectives:
1. Understanding the MATLAB software environment
2. Demonstrate how MATLAB can be used to solve a range of mathematical problems
3. Introduce common approaches and conditional statement for creating and evaluating computer programs.
4. Introduce curve fitting for various polynomials using MATLAB.
5. Apply a variety of common numeric techniques to solve and visualize engineering-related computational problems

UNIT–I:
Starting with MATLAB: Working in the Command Window, Arithmetic Operations, Display Formats, Built-In Functions, Defining Scalar Variables, Script Files, Examples of MATLAB Applications.
MATLAB Plots: Two-Dimensional Plots, Three-Dimensional Plots.

UNIT–II:
Creating Arrays: One and two-dimensional Array, Array Addressing, Built-In Functions, Strings and Strings as Variables
Mathematical Operations with Arrays: Addition, Subtraction, Multiplication, Division, Built-in MATH Functions, Generation of Random Numbers, Script Files and Managing Data, Examples of MATLAB Applications.

UNIT–III:
Programming in MATLAB: Relational and Logical Operators, Conditional Statements, Nested Loops and Nested Conditional Statements.
User-Defined Functions and Function Files: Comparison Between Script Files and Function Files, Anonymous and Inline Functions, Function Functions, Sub-functions, Nested Functions, Examples

UNIT–IV: Polynomials, Curve Fitting, and Interpolation
Polynomials - Value of Polynomial, Roots of Polynomial, Addition, Multiplication, Derivatives and Division of Polynomials; Curve Fitting Curve Fitting with Polynomials, interpolation, Examples of MATLAB Applications.

UNIT–V: Applications in Numerical Analysis
One variable, Integration, Ordinary Differential Equations, Mesh, surface, special graphs, view commands, symbolic objects and expressions, algebraic equation, differentiation, integration, Examples, Introduction to Simulink

Course Outcomes:

A student who successfully fulfils this course requirement will be able to:

S.No	Course Outcome	BTL
1.	Create 2D and 3D plots of mathematical functions and data.	L5
2.	Understand arithmetic on scalars, vectors and matrices.	L2
3.	**Construct simple scripts and functions.**	L5
4.	Solve scientific and mathematical problems	L3
5.	Apply numeric techniques and computer simulations to solve engineering-related problems.	L3

Correlation of COs with POs& PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	-	2	-	-	-	-	-	-	-	1	3
CO2	2	-	-	-	2	-	-	-	-	-	-	-	1	3
CO3	-	1	-	-	2	-	-	-	-	-	-	-	1	3
CO4	3	1	-	1	2	-	-	-	-	-	-	2	1	3
CO5	2	1	-	1	3	-	-	-	-	-	-	2	1	3

Text Books:

1. MATLAB: An Introduction with Applications – Amos Gilat, Wiley Publishers, Fourth Edition.
2. MATLAB Programming for Engineers – Stephen J. Chapman, Cengage Publishers, Fourth Edition.

Reference Books:

1. Essential MATLAB for Engineers and Scientists – Brian H. Hahan and Daniel T. Valentine, Elsevier Publications, Fourth Edition.
2. MATLAB: A practical Introduction to programming and problem solving – Stormy Attaway, Elsevier BH, Second Edition.