II B.Tech - I Semester (20EC3201) MATLAB FOR ENGINEERS

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Int. Marks Ext. Marks Total Marks

-- 50 50

Course Objectives:

- Understanding the MATLAB software environment
- Demonstrate how MATLAB can be used to solve a range of mathematical problems
- Introduce common approaches and conditional statement for creating and evaluating computer programs.
- Introduce curve fitting for various polynomials using MATLAB.
- 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:

After successful completion of the course, the students can 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.