20EC2601A - MATLAB PROGRAMMING

Offering Branch	ECE		
Course Category:	Open Elective -II	Credits:	3
Course Type:	Theory	Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	NIL	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Outline** the basic concepts of MATLAB.	K2
CO2	**Develop** programs for scientific and mathematical problems.	K3
CO3	**Analyze** an engineering system/Problem through graphical representation and numerical analysis.	K4
CO4	**Build** optimized code for various applications in Engineering and Technology.	K3

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2									1			2	2
CO2	3									2			3	3
CO3		2								2			2	2
CO4	3									2			3	3
Avg.	**3**	**2**								**2**			**2**	**2**

1- Low **2-Medium** **3-High**

Course Content

UNIT-1	**Introduction:** Starting MATLAB, Working in command window, Arithmetic operations, Display formats, Elementary Math Built-in functions, Defining scalar variables, useful commands for managing variables, Script files, Examples of MATLAB applications	CO1, CO2
UNIT-2	**Creating arrays and Mathematical operations with arrays:**Creating 1-dimensional and 2- dimensional arrays, The Transpose operator, Array addressing, using a colon: in addressing arrays, Adding elements to existing variables, Deleting elements, Built in functions for handling arrays, Strings and strings as variables, Addition and Subtraction, Array Multiplication and Division, Element-by-Element operations, using arrays in MATLAB built-in math functions, Built in functions for analysing arrays, Generation of Random Numbers, Examples of MATLAB applications.	CO1, CO2, CO4
UNIT-3	**Two Dimensional and Three Dimensional Plots:** plot, fplot commands, Formatting a plot, plots with logarithmic axes, error bars, special graphics, Histograms, Polar plots, putting multiple plots on the same page, Multiple figure windows, Examples, Line plots, Mesh and surface plots, plots with special graphics, The view command, Examples of MATLAB applications	CO1, CO2, CO3, CO4
UNIT-4	**Programming in MATLAB:** Relational and Logical operators, conditional statements, The switch-case statement, Loops, Nested Loops and Nested conditional statements, The break and continue commands, creating a function file, structure of a function file, Local and Global variables, saving a function file, using a User-defined function, Examples of simple User-defined functions, comparison between script files and function files.	CO1, CO2, CO4
UNIT-5	**Polynomial, Curve-fitting, Interpolation, Numerical Analysis**: Polynomials, curve fitting, Interpolation, The Basic fitting interface, Examples, solving equation	CO2, CO3, CO4

	of one variable, Finding minimum or maximum of a function, Numerical integration, ordinary differential equations.	

Learning Resources

Text Books	1. MATLAB: An Introduction with applications – Amos Gilat, Wiley India Pvt. Ltd, 4th Ed., 2012.
Reference Books	1. Getting started with MATLAB – Rudra Pratap, Oxford University Press, 2010 2. MATLAB and SIMULINK for Engineers – Agam Kumar Tyagi, Oxford University Press, 2012.