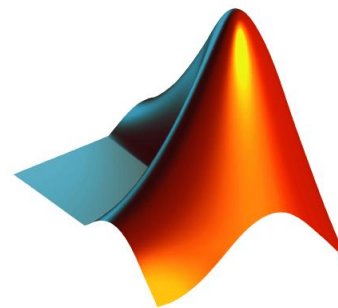


MATLAB SYLLABUS



Course Duration = 4 Weeks

Hours = 60 hrs

COURSE CONTENT

Introduction to MATLAB	Brief Introduction
	Installation of MATLAB
	History
	Use of MATLAB
	Key features
MATLAB software	Introduction to MATLAB Software
	MATLAB window
	Command window
	Workspace
	Command history
	Setting directory
	Working with the MATLAB user interface
	Basic commands
	Assigning variables
	Operations with variables
Data files and Data types	Character and string
	Arrays and vectors
	Column vectors
	Row vectors
Basic Mathematics	BODMAS Rules
	Arithmetic operations
	Operators and special characters
	Mathematical and logical operators
	Solving arithmetic equations
Operations on matrix	Crating rows and columns Matrix
	Matrix operations
	Finding transpose, determinant and inverse
	Solving matrix
Other operations	Trigonometric functions
	Complex numbers
	fractions
	Real numbers
	Complex numbers
M files	Working with script tools

	Writing Script file
	Executing script files
	The MATLAB Editor
	Saving m files
Plots	Plotting vector and matrix data
	Plot labelling, curve labelling and editing
2D plots	Basic Plotting Functions
	Creating a Plot
	Plotting Multiple Data Sets in One Graph
	Specifying Line Styles and Colors
	Graphing Imaginary and Complex Data
	Figure Windows
	Displaying Multiple Plots in One Figure
	Controlling the Axes
3D plots	Creating Mesh and Surface
	About Mesh and Surface Visualizing
	Subplots
GUI Design	Introduction Of Graphical User Interface
	GUI Function Property
	GUI Component Design
	GUI Container
	Writing the code of GUI Callback
	Dialog Box
	Menu Designing
	Applications
MATLAB Simulink	Introduction Of Simulink
	Simulink Environment & Interface
	Study of Library
	Circuit Oriented Design
	Equation Oriented Design
	Model
	Subsystem Design
	Connect Call back to subsystem
	Application
MATLAB Programming	Automating commands with scripts
	Writing programs with logic and flow control
	Writing functions
	Control statement Programming
	Conditional Statement Programming
	Examples
Loops and Conditional Statements	Control Flow Conditional Control – if, else, switch
	Loop Control – for, while, continue, break
	Program Termination – return
Functions	Writing user defined functions
	Built in Function
	Function calling
	Return Value

	Types of Functions	
	Global Variables	
Image Processing with MATLAB	Importing and Visualizing Images	
	Importing and displaying images	
	Converting between image types	
	Exporting images	
	Interactive Exploration of Images	
	Obtaining pixel intensity values	
	Extracting a region of interest	
	Computing pixel statistics	
	Measuring object sizes	
	Creating a custom interactive tool	
	Preprocessing Images	
	Adjusting image contrast	
	Reducing noise in an image	
	Using sliding neighborhood operations	
	Using block processing operations	
	Symbolic Math in MATLAB	Calculus: Numerical Integration
		Linear Algebra
Roots of Polynomials		
Algebraic equations		
Differential Equations (1st & 2nd order)		
Transforms (Fourier, Laplace, etc)		
Ordinary Differential equations		
Examples of few ODEs		

Faculty Incharge

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