

## INTRODUCTION to MATLAB

- Historical Background
- Applications
- Scope of MATLAB
- Importance of MATLAB for Engineers
- Features
- MATLAB Windows(Editor, Work Space, Command History, Command Window)
- Operations with Variables
- Naming and Checking Existence
- Clearing Operations
- Introduction to Arrays
- MATLAB File Types

## DATA and DATA FLOW in MATLAB

- Matrix Operations & Operators
- Reshaping Matrices
- Importing Exporting Of Data
- Arrays
- Data types
- File Input-Output
- Communication with External Devices

## EDITING and DEBUGGING M FILES

- Writing Script Files
- Writing Functions
- Error Correction
- M-Lint Automatic Code Analyzer
- Saving Files

## PROGRAMMING

- Flow Control
- Conditional Statements
- Error Handling
- Work with Multidimensional Array
- Cell Array & Characters
- Developing User Defined Function
- Scripts and Other Functions

## MATLAB GRAPHICS

- Simple Graphics
- Graphic Types

- Plotting Functions
- Creating Plot & Editing Plot(2D and 3D)
- Graphics Handles
- GUI(Graphical User Interface)

## DETAILED ANALYSIS of CONTROL SYSTEM TOOLBOX

- General Instructions
- Creation of Linear Models
- Classes of Control System Toolbox
- Discussion on State Space Representation
- Transfer Function
- System Gain and Dynamics
- Time & Frequency Domain Analysis
- Classical Design, State Space Model
- Transfer Function Representation, System Response
- LTI Viewer Detail and Explanation About LTI Viewer
- Designing of Compensator
- Use of SISO Design & MIMO Design Tool

## SIMULINK

- Introduction
- Importance
- Model Based Design
- Tools
- Mathematical Modeling
- Converting Mathematical Model into Simulink Model
- Running Simulink Models
- Importing Exporting Data
- Solver Configuration
  - Masking Block/Model

## COMMUNICATION TOOLBOX

- Introduction to modeling Communication System

## IMAGE PROCESSING TOOLBOXES

- Introduction to Image Application
- Model Based Project based on Simulink

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