



Techno India NJR Institute of Technology, Udaipur

Department of Electrical Engineering

Training Program

on

'MATLAB Programming and Simulink Modeling'

Overview

MATLAB or (Matrix Laboratory) is a high performance fourth generation programming language which is used for technical computing. It provides multi paradigm numerical computing environment and was developed by Math Works. It is used for integrating computation, visualization and programming so that the programming environment becomes easy to use. MATLAB Training is used for several important purposes.

Some of them are:

- It's used for symbolic computation.
- Used for developing algorithm.
- Provides application of scientific and engineering graphics.
- Analysis of data, visualization, and exploration is conducted.
- Can be used for designing Graphical User Interface.
- Used for Technical computation.

The most important feature of MATLAB Training is that it is used for calculating matrix and vector formulations in fraction of time. **Certificate will be provided to each participating student who complete the Training.**

Industry Demands and Career Scope in MATLAB

The applications of MATLAB are immense. It is a powerful linear algebra tool with a very good collection of toolboxes. Therefore, it finds applications in research and teaching on domains of robotics and automation.

A lot of companies ranging from banking, finance, engineering, scientific and education requires the application of MATLAB and they are on a lookout for students who have MATLAB Training to increase their productivity.

Companies are offering full time job opportunities, higher pay perks, attractive bonuses to attract the MATLAB professionals. Students who opt for MATLAB Training are getting more pay packages as compared

For Techno India NJR Institute of Technology
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to the IT professionals, this is because MATLAB helps to solve technical problem in much less time as compared to other languages such as C/C++/Java.

MODULE 1 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

MODULE 2 HANDLING DATA AND DATA FLOW IN MATLAB

- Data types
- Creating Variables
- Scalars, Vectors and Matrix Operations & Operators
- Importing & Exporting of Data
- File Input-Output

MODULE 3 EDITING AND DEBUGGING M FILES

- Writing Script Files
- Writing Function Files
- Inserting Breakpoints and Debugging
- Error Correction

MODULE 4 MATLAB GRAPHICS

- Simple Graphics.
- Graphic Types.
- Plotting Functions.
- Creating Plot & Editing Plot (2D and 3D).
- Graphics Handles.



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MODULE 5 SYSTEM PROGRAMMING

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

MODULE 6 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.

MODULE 7 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