

DSP Implementation using MATLAB

Synopsis & Objective of Course

Matlab (Matrix Laboratory) language is a high-level matrix/array language with control flow statements, functions, data structures, input/output, and object-oriented programming features. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation.

Digital Signal Processing becomes simpler with MATLAB implementation.

Target Audience

DSP Programmers and Electronics engineers who are wanting to use MATLAB as tool/language to realise DSP concepts.

Prerequisites

Trainees should have a conceptual knowledge of Digital Signal Processing. An elementary knowledge of the C language is helpful but not essential.

Delivery

Training will start with understanding of language features, followed by implementation of DSP concepts. This will be followed by Hands-on exercises & qualitative projects like speech processing, compression etc.

The Trainee is requested to inform the trainer of his prior DSP knowledge.

Duration : 5 days

Course Contents

Day	Topic	Sub topics
Day 1	Introduction to matlab	What is matlab, Need of matlab, Features of matlab, Advantages and disadvantage of matlab, Starting the matlab, Quiting matlab,
	Matrices	About Matrices Entering Matrices sum, transpose, and diag Subscripts The Colon Operator.
	Variables	Variables Numbers Operators

	Arrays and Functions	<p>Arrays</p> <p>Multivariate Data</p> <p>Scalar Expansion</p> <p>Logical Subscripting</p> <p>The find Function</p> <p>The magic Function</p> <p>Functions</p> <p>Examples of Expressions</p> <p>Generating Matrices</p> <p>The load Function</p> <p>Linear Algebra</p>
Day 2	Graphics:	<p>Plotting Process ,Graph Components</p> <p>Arranging Graphs Within a Figure</p> <p>Choosing a Type of Graph to Plot</p> <p>Plot Edit Mode,Using Functions to Edit Graphs</p> <p>Plotting Two Variables with Plotting Tools</p> <p>Changing the Appearance of Lines and Markers</p> <p>Adding More Data to the Graph</p> <p>Changing the Type of Graph</p> <p>Modifying the Graph Data Source</p> <p>Annotating Graphs for Presentation</p> <p>Creating, Exploring and plotting a Plot</p> <p>Plotting Multiple Data Sets in One Graph</p> <p>Specifying Line Styles and Colors</p> <p>Plotting Lines and Markers</p> <p>Graphing Imaginary and Complex Data</p> <p>Adding Plots to an Existing Graph</p> <p>Figure Windows</p> <p>Displaying Multiple Plots in One Figure</p> <p>Controlling the Axes Adding Axis Labels and Titles</p>
	exercises	<p>Examples on signals, signal properties, signal operations, plotting, transformation,</p>
Day 3	Programming Flow Control	<p>Conditional Control – if, else, switch</p> <p>Loop Control – for, while, continue, break</p> <p>Error Control – try, catch</p> <p>Program Termination – return</p> <p>Multidimensional Arrays</p> <p>Cell Arrays,Characters and Text</p> <p>Structures</p>

	Scripts and Functions	Scripts Functions Types of Functions Global Variables Passing String Arguments to Functions The eval Function Function Handles Function Functions Vectorization Preallocation
Day 4	Data Analysis Introduction Preprocessing Data	Overview Loading the Data Missing Data Smoothing and Filtering Summarizing Data Measures of Location & Scale Shape of a Distribution Visualizing Data 2-D & 3-D Scatter Plots Scatter Plot Arrays Exploring Data in Graphs Modeling Data Overview Polynomial Regression General Linear Regression
Day 5	Creating Graphical User Interfaces What Is GUIDE?	Laying Out a GUI Starting GUIDE The Layout Editor . Programming a GUI

Trainers' Profile

Corporate Trainer(s) with more than 6 years of experience in embedded development & corporate training in CMM level5 companies.

Scheduled & On-site Training

Apart from in-house training programs, comprehensive training can be also provided as per the requirement & will be optimally customized as per the client's needs.

For training calendar, availability of seats & other details please mail us at training@sigmasolutions.co.in