

Fundamentals of MATLAB programming

Module 1 – Introduction and basic operations

- Introduction to MATLAB and its application across various engineering disciplines.
- Basic syntax, variables, data types and using matlab as computation tool
- Vectors, matrix operations, arrays and indexing of vectors and matrixes

Module 2 – Programming with Matlab

- Decision making statements (if - else statements)
- Loops (for loop, while loop, Nested for loop, par-for loop)
- Function, assigning local and global variables, vectorization of variables inside functions and loops

Module 3 – Data handling with Matlab

- Data import and operations (from excel, csv, text, image or other data files)
- Plotting 2D (Line, scatter, bar, histogram, stairs) with plot properties
- Plotting 3D (Surface, heatmap, bubble, swarmcharts) with plot properties
- Storing output of plots in different formats with required resolutions
- Data analysis, statistical operations with large data sets
- Curve fitting and fitting properties of a various plots

Module 4 – Advance level operations

- Calculus operations using sym function
- Solving differential equations using ODE solver
- Model building using ODE and simulate according to given conditions
- Introduction to Image processing with matlab
- Introduction to Machine learning using matlab (ANN)