Advanced MATLAB Programming

Course Duration: 2 days

Course Objectives

1	Review fundamentals: strengthen programming knowledge
2	Advance MATLAB programming: recursion, function handles, efficiency.
3	MATLAB OOP: code organization, reusability.
4	GUIs, standalone apps: create professional interfaces.
5	Enhance problem-solving: challenging assignments, comprehensive project.

Course Modules

Module 01: Introduction to MATLAB	
1.1	- Recap of fundamental programming concepts
1.2	- Refreshing knowledge on variables, data types, and basic operations
1.3	- Revisiting control flow statements (if-else, loops)
1.4	- Reviewing input/output (I/O) operations
1.5	- Reinforcing array and matrix manipulation
1.6	- Exploring built-in MATLAB functions and libraries
Module 02: Functions Revisited	
2.1	- Recursion
2.2	- Function handles
2.3	- Nested functions
Module 03: Potpourri	
3.1	- Mixed mode arithmetic
3.2	- Linear equations
3.3	- Live Scripts
Module 04: How to Write Efficient Programs	
4.1	- Theoretical background on evaluating algorithm efficiency
4.2	- Practical advice on writing fast programs
Module 05: Object Oriented Programming	
5.1	- Introduction to Object Oriented Programming (OOP)

5.2	- MATLAB's OOP features through an extended example
5.3	- Graphical User Interfaces (GUIs) in MATLAB
Module 06: Applications of MATLAB	
6.1	- Creating modern GUIs for programs
6.2	- Developing standalone applications for computers without MATLAB
6.3	- Writing an object-oriented program with a professional GUI