Learning MATLAB: A problem solving approach

Course Outline:

Schedule	Major Topics Covered	Number of lectures
Week - 01	▪ Introduction to programming ▪ Introduction to MATLAB programming environment ▪ Introduction to different Data types in MATLAB and their differences ▪ Homogeneous and heterogeneous data types ▪ Difference between character array and string ▪ Indexing – linear index vs subscripts ▪ Introduction to Functions ▪ How to handle variable numbers of input and output in built-in functions ▪ Introduction to how to use MATLAB documentation	4 (1 hour) + 1 Quiz
Week - 02	▪ Loop and conditional statement ▪ Matrix manipulation and Data extraction ▪ Introduction to plots app ▪ Vectorization	10 (3 hour) + 1 assignment (9 problems)

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	▪ Nan handling ▪ Broadcasting ▪ Conversion between linear index and subscripts ▪ Logical Indexing ▪ tic…toc	Solved exercises = 10
Week - 03	▪ More examples of broadcasting, vectorization ▪ User-defined function ▪ Variables – local, global, persistent ▪ Introduction to toolboxes ▪ Introduction to binary image ▪ Varargin, varargout ▪ Regular expression ▪ How vectorization works	12 (3.15 hour) + 1 assignment (11 problems) Solved exercises = 10
Week – 04	▪ Pre-allocation ▪ Concept of multi-dimensional matrix ▪ Alternative to regexp in MATLAB – Insert, Erase, Replace, Extract ▪ Boolean Masking ▪ Plotting – scatter plot, histogram, bat plot, subplot etc.	12 (2.30 hour) + 1 assignment (13 problems)

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	▪ Polyshape object ▪ Table Data type ▪ Categorical Data type ▪ Import Data in MATLAB ▪ Introduction to live script ▪ Arithmetic operations in MATLAB	Solved exercises = 8
Week – 05	▪ Review ▪ How to write a code in MATLAB that is fast and compact ▪ Overview of Cody	Mock Test Quiz

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