

MAE 8
MATLAB Programming for Engineering Analysis (4 units)

Class/Laboratory Schedule: Three hours of lecture, one hour of discussion, eight hours outside preparation, 12 hours/week total

Course Coordinator(s): Hieu Tan Pham, Marko Lubarda

Textbooks/Materials:

1. Stormy Attaway, *MATLAB - A Practical Introduction to Programming and Problem Solving (6th edition)*, BH, 2022

Catalog Description: Computer programming in MATLAB with elementary numerical analysis of engineering problems. Arithmetic and logical operations, arrays, graphical presentation of computations, symbolic mathematics, solutions of equations, and introduction to data structures.

Prerequisites: Math 20A and Math 20B or consent of instructor

Course type: Required

Course Objectives:

1. To introduce students to the MATLAB programming environment and built-in tools and functionality
2. To teach students array operations (inner product, matrix multiplication, transposition, concatenation, truncation, etc.)
3. To teach students to design and implement computer programs for engineering analysis and problem solving using selection statements, loops, and user-defined functions
4. To teach students to process data files and visualize data using 2D and 3D plots

Course Topics:

1. Introduction to MATLAB software
2. Data types, vectors and matrices
3. Mathematical, logical, and vectorized operations
4. Input and output (I/O), data files
5. Selection and loop statements
6. User-defined functions
7. Strings, data structures
8. Plotting and visualization techniques
9. Symbolic computations

Last Updated: 20th March 2025