MEC 102: Engineering Computing and Problem Solving

Spring, 2020

Class Hours: Tuesday and Thursday 1:00PM - 2:20PM @ Engineering 145

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Course Description

Students with no significant experience on programming will learn to use MATLAB for problem solving and analysis in science and engineering. The course will cover the basic use and capabilities of MATLAB and its application to concrete problems in engineering.

Tentative Schedule

Week 01	Introduction to Matlab
Week 02	Fundamental operations
Week 03	Linear Algebra
Week 04	Plotting (1D, 2D, 3D)
Week 05	Control Structures
Week 06	Functions
Week 07	Input & Output
Week 08	No Class (Spring Recess)
Week 09	Midterm & Introduction to Object-Oriented Programming
Week 10	Statistical analysis
Week 11	Numerical Calculus
Week 12	Engineering Applications I
Week 13	Engineering Applications II
Week 14	Introduction to Machine Learning
Week 15	No Class, Final Project Due.

Prerequisites

A grade of C or better in MEC 101 or CIV 101.

Suggested Materials

Software: MATLAB_R2018b or newer version installed in your personal computer and/or access at SINC sites.

Hardware: Laptop for hands-on session.

Textbook: MATLAB Programming for Engineers (5th or 6th Edition). Author: Stephen J. Chapman. Publisher: CENGAGE Learning.

Grading Policy

Letter grading scale A-F.

• 30%: Homework assignments
• 30%: Midterm Exam
• 40%: Final project

Course Learning Outcomes/Objectives

Upon successful completion of this course, the students will be able to:

1. Define variables and structure programs.

2. Write commands and scripts in MATLAB

3. Create control structures (selection, repetition).

4. Create modular programs using functions.

5. Synthesize programming structures to solve practical engineering problems.

Attendance Verification
Attendance verification is required by the Registrar Office:
See https://www.stonybrook.edu/commcms/registrar/policies/tracking.php

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact
 Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and

appropriate. All information and documentation is confidential.
Students who require assistance during emergency evacuation are encouraged to discuss their needs with their
 instructor and Student Accessibility Support Center. For procedures and information go to the following website:
 http://www.stonybrook.edu/ehs/fire/disabilities.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work.
 Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty refer to the academic judiciary website at
http://www.stonybrook.edu/commcms/academic_integrity/index.html.

Critical Incident Management

Students must respect at all times the rights, privileges, and property of other people. Faculty are
 required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.