EGN 1213 - Engineering Computing: MATLAB

Spring 2026

- **Instructor**
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    Office Hours: T TH 12:45 - 2:15 pm
- **Grader**
  - TBD
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- **Course Specifics**

  Section 3: T TH 2:30-3:45 pm — IST 1032

  Credit hours: 3
  - Lecture hours: 3
  - Lab hours: 0

  Full-Term, Spring 2026

  Delivery mode: In-person
- **Prerequisite(s) / Corequisite(s)**

  Prerequisites: None

  Communication/Computation Skills Requirement (6A-10.030): None
- **Course Description**

  This course introduces students to engineering computing using MATLAB, tailored for mechanical, civil, industrial, environmental, and other non-electrical engineering disciplines. Students will learn programming fundamentals, data analysis, and visualization while applying these skills to solve practical engineering problems. The course emphasizes real-world applications and equips students with computational tools essential for success in their fields.
- **Course Objectives**

  This course combines hands-on programming exercises, real-world applications, and interdisciplinary problem-solving to engage students. MATLAB is a versatile and industry-relevant tool, and mastering it early prepares students for advanced coursework and professional roles. By focusing on practical challenges, the course builds confidence and computational proficiency.

- **Course Learning Outcomes & Alignment with Program Outcomes**

Course Learning Outcome	ABET Learning Outcome
Create and manipulate vectors and matrices to perform engineering calculations.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and math. (ABET 1)
Visualize data effectively using 2D plots, annotations, and basic 3D graphs.	An ability to communicate effectively with a range of audiences. (ABET 3)
Write algorithms using logical operators (if/else) and loops (for/while) to automate repetitive tasks.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and math. (ABET 1)
Develop modular code using user-defined functions to simplify complex problems.	An ability to acquire and apply new knowledge as needed (ABET 7)
Import, clean, and analyze data from Excel or text files.	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (ABET 6)
Build a simple interactive graphical user interface (GUI) using App Designer.	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (ABET 2)

Textbook, Instructional, and Required Material

MATLAB Academy: Access provided via the University's MathWorks Campus-Wide License.

MATLAB & Simulink (Latest Release) installed on a personal computer.

Material, resources, and reference material will be posted to Canvas

Attendance

- Students are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP). It is the student's responsibility to give the instructor notice prior to any anticipated absence and within a reasonable period after an unanticipated absence, ordinarily by the next scheduled class meeting.

Evaluation

- MATLAB Academy (25%): Completion of "Onramps" and specific modules.
- Homework (25%): Approximately weekly assignments.
- Exams (40%): Two exams (20% each) covering the core concepts of programming logic, syntax, and data manipulation.
- Final Mini Project (10%): A creative project where students build a MATLAB App or solve a comprehensive engineering challenge.

Activity	Percentage
MATLAB Academy	25
Homework	25
Exam 1	20
Exam 2	20
Final Mini Project	10
Total	100

Grading Scale

- Percentages that fall between grades will be rounded up.
- Grades for each assignment will be posted to Canvas and students should make sure they are recorded correctly. However, there is no guarantee that the percentages or projected grades provided there are correct.
- The instructor will calculate final percentages and will determine final grades regardless of Canvas calculations.

Grade	Percentage
A	100 - 93
A-	92 - 90
B+	89 - 86
B	85 - 83
B-	82 - 80
C+	79 - 76
C	75 - 70
D	69 - 60
F	59 - 0

University Policies

- Academic Integrity: All students must commit to the highest ethical standards in completion of all academic pursuits and endeavors: Academic Integrity
- Reasonable Accommodations: Students who qualify for course or classroom adjustments under the Americans with Disabilities Act (ADA) must register with the Office of Disability Services: Request for Disability Services
- Accommodations for Religious Observances, Practices and Beliefs
- Title IX: Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sexual misconduct, including discrimination based on sex or gender, harassment, stalking, sexual assault, sexual exploitation, or intimate partner violence. If you or someone you know needs assistance, you may speak to any university employee; however, they have an obligation to report the incident to the Title IX Coordinator, who will keep that information private to the greatest extent possible. If you want to speak to someone permitted to keep your disclosure confidential, seek assistance from the Florida Polytechnic University Ombudsman, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-412-2700 (24-hour hotline) or 863-412-2708 to schedule an appointment. If you or someone you know feels unsafe or may be in imminent danger, please call the Florida Polytechnic University Police Department 863-874-8472 or the local Police Department 911 immediately. For more information about policy, reporting options and resources at Florida Polytechnic University and the community, please visit the Title IX Website.

Official Email Address

Florida Polytechnic University email is the official method of communication for the University. Students are required to check their Florida Poly e-mail frequently.

Emails must be sent from your Florida Poly email account. Please start the subject line with [MATLAB] for a quicker response time and allow up to 36 hours for a reply on weekdays.

Academic Support Resources

Students can access the Florida Polytechnic University Library through the student portal and Canvas, on and off campus. Students may direct questions to the Success Desk in the Commons or by email, library@floridapoly.edu.

The Academic Success Center, located in the Commons, provides a range of services including tutoring. Students may direct questions to ASC@floridapoly.edu.

Special Notes

Students are permitted to have their cell phone on during class provided that they are not allowing it to cause distraction to others, endangering the user or others, or being used during a quiz or exam. If a call must be answered, the student is asked to step out of the classroom and return after the conversation is complete. However, taking a call does not exempt the student responsibility for material covered or activities performed during that time.

Course Schedule

Class	Date	Topic	Preparation
1	Jan. 13	Intro to MATLAB	MATLAB Onramp (Sec 1–8)
2	Jan. 15	Intro to MATLAB	MATLAB Onramp (Sec 1–8)
3	Jan. 20	Scripts & Math	MATLAB Onramp (Finish)
4	Jan. 22	Scripts & Math	MATLAB Onramp (Finish)
5	Jan. 27	Vectors & Matrices	Make & Manipulate Matrices
6	Jan. 29	Vectors & Matrices	Make & Manipulate Matrices
7	Feb. 3	Array Math	Calculations with Vectors
8	Feb. 5	Array Math	Calculations with Vectors
	Feb. 10	Visualization	Explore Data with MATLAB Plots
9	Feb. 12	Visualization	Explore Data with MATLAB Plots
10	Feb. 17	Intro to Logic	Programming Constructs (Intro/Interaction)
11	Feb. 19	Intro to Logic	Programming Constructs (Intro/Interaction)
12	Feb. 24	Logic (Decisions)	Programming Constructs (If–Else)
13	Feb. 26	Exam 1	
14	Mar. 3	Loops (Repetition)	Programming Constructs (Loops)
15	Mar. 5	Loops (Repetition)	Programming Constructs (Loops)
16	Mar. 10	Functions I	Writing Functions
17	Mar. 12	Functions I	Writing Functions
Spring Break – Mar. 16–20			
18	Mar. 24	Functions II	User-Friendly Functions
19	Mar. 26	Functions II	User-Friendly Functions
20	Mar. 31	Importing Data	Import Data or Tables
21	Apr. 2	Exam 2	
22	Apr. 7	Data Analysis	Common Analysis Techniques
23	Apr. 9	Data Analysis	Common Analysis Techniques
24	Apr. 14	App Building	App Building Onramp
25	Apr. 16	App Building	App Building Onramp
26	Apr. 21	Work on Final Mini Project	Work on Final Mini Project
27	Apr. 23	Work on Final Mini Project	Work on Final Mini Project
28	Apr. 28	Project Presentations	
29	May 5	Project Presentations	

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. This schedule is subject to change without notice. - Dr. Eric C. Havenhill