



School of Engineering
*Information
Technology Program*

ITP 168 – Introduction to MATLAB

Units: 2

Fall 2023

Instructor: Reza Jafarkhani

Contact Info: jafarkha@usc.edu

Meeting Hours / Location:

Sec. 31821 TTh 11:00 am - 12:20 pm (PT) OHE 540

Sec. 32058 TTh 12:30 pm - 1:50 pm (PT) OHE 540

Office Hours:

- I. Piazza
- II. MW 1:00 pm – 2:00 pm (PT) RRB 211 (or Zoom)
- III. By Appointment

Course Producer / Email / Office Hours:

Alvin Guo alvinguo@usc.edu TBD

Aditi Jagannathan aajagann@usc.edu TBD

Course Description

Fundamentals of MATLAB: a high-performance numeric computation and visualization environment. Overview of linear algebra and matrix manipulation using plotting routines; programming in MATLAB; basic numerical analysis

Learning Objectives

Students will be able to:

- Develop algorithms to solve multi-domain problems
- Create MATLAB script and function files
- Create and manipulate data in arrays, cells, structures, and various other forms
- Visualize data using plotting routines
- Design, build, and test MATLAB programs and functions
- Solve derivative and integration problems using numerical methods
- Set up and solve systems of equations

Prerequisite(s): None

Co-Requisite(s): None

Concurrent Enrollment: None

Recommended Preparation: MATH 118x or MATH 125

Course Notes

All lecture slides and course content including homework will be posted to the course Blackboard page. Course announcements will be posted to Piazza online forum, posted as an announcement to Blackboard, or emailed directly to your USC emails. Midterm and Final Examination are to be completed through the Blackboard platform. Instructions on accessing these different systems will be given before the first class session.

Technological Proficiency and Hardware/Software Required

Students are expected to be able to perform the following tasks before the course begins:

- **Create a ZIP file that contains one or more files**
- **UnZIP a file that contains one or more files**
- **Submit files through Blackboard's submission page**
- **Install MATLAB software**
- **Download files from Blackboard**

We will be using MATLAB R2023a. Your code **MUST** work in R2023a, otherwise it will be considered incorrect. All functions/concepts given in **lecture** are compatible with MATLAB R2023a. Your code must work without using any other library/toolbox/supplemental add-ons for MATLAB. If you use an obscure function only present in the Statistics and Analytics, or Machine Learning, or Image Processing toolboxes you will not get credit. MATLAB is available for download at: <https://software.usc.edu/>

Reference book:

"MATLAB: An Introduction with Applications", 6th Edition by Amos Gilat ISBN: 978-1-119-25683-0

Grading Breakdown

You will be graded on the following

ITEM	% of Grade
Homework Assignments	45
Midterm Exam	25
Final Exam	30
TOTAL	100

Grading Scale

Course final grades will be determined using the following scale

A	93+
A-	90 - <93
B+	87 - <90
B	83 - <87
B-	80 - <83
C+	77 - <80
C	73 - <77
C-	70 - <73
D+	67 - <70
D	63 - <67
D-	60 - <63
F	<60

Assignment Submission Policy - Homework

Homework assignments are to be submitted on Blackboard only. Any other form of submission to instructor, teaching assistant, or grader will not be counted. Only the last submission on Blackboard will be graded. Students will not be able to get points for any previous submissions regardless of whether the previous submissions were correct or on time. There will be no accepting late homework with the exception of the grace days' policy listed below.

Grace Days

Students are expected to attend and participate in lecture discussions and in-class exercises. Students are responsible for completing individual assignments and their fair share of team assignments by stated deadlines. Late assignment submissions will be subject to a late penalty (24 hrs. grace period with 25% deduction). No assignments will be accepted later than 24 hrs. from the due date. Students have one week to contest a grade once it has been posted on Blackboard. After this one week, the grade will not be changed. To contest a grade, create a private post on Piazza and select the grades folder. In the post, include your name, the assignment name, and your reasons.

Grading Timeline

Grading of homework will typically be done within 2 weeks of the deadline.

Additional Policies

Students who add the course after the start of the semester are responsible for all the work during the time they were not enrolled. A student must contact the instructor about their enrollment and schedule a time to complete the missing work. Any student who fails to contact the instructor to make up the work will be granted a 0 for the work missed. Contact must be made before the add/drop deadline.

Make-up policy for exams: To make up for a missed exam, the student must provide a satisfactory reason (as determined by the instructor) along with proper documentation. Make-up exams are generally only offered in medical or family emergency situations with the appropriate documentation. Missing an examination due to unforeseen delays in non-emergency travel plans will not constitute a satisfactory reason.

Before logging off any ITP-owned computer (laptops, desktops in OHE 540, OHE 542, KAP 107, KAP 160, KAP 162, KAP 267) students must ensure that they have saved any work to either a USB drive or a service such as Dropbox. Any work saved to the computer will be erased after restarting the computer. ITP is not responsible for any work lost.

This course will make use of Piazza, an online discussion forum. Students will be invited to join the class discussion but are not required to. Students may post questions, answer other student's questions, post anonymously, or post privately. Students are not allowed to post homework code to Piazza publicly. Students may post homework code privately on Piazza to instructors only. Any student caught posting homework code on Piazza will be punished through SJACS.

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Homework	Homework Due
Week 1	Starting with MATLAB		
Week 2	Creating Arrays	HW1 Assigned	
Week 3	Mathematical Operations with Arrays	HW2 Assigned	HW1 Due
Week 4	Using Script Files and Managing Data	HW3 Assigned	HW2 Due
Week 5	Two-Dimensional Plots	HW4 Assigned	HW3 Due
Week 6	Programming in MATLAB	HW5 Assigned	HW4 Due
Week 7	Programming in MATLAB		HW5 Due
Week 8	Midterm		
Week 9	User-Defined Functions and Function Files	HW6 Assigned	
Week 10	User-Defined Functions and Function Files	HW7 Assigned	HW6 Due
Week 11	Polynomials, Curve Fitting, and Interpolation	HW8 Assigned	HW7 Due
Week 12	Applications in Numerical Analysis	HW9 Assigned	HW8 Due
Week 13	Applications in Numerical Analysis	HW10 Assigned	HW9 Due
Week 14	Three-Dimensional Plots	HW11 Assigned	HW10 Due
Week 15	Final Exam Review		HW11 Due
FINAL	<p>Tuesday, December 12</p> <p>31821 8:00 am - 10:00 am (PT)</p> <p>32058 11:00 am - 1:00 pm (PT)</p>		<p>Date: For the date and time of the final for this class, consult the USC <i>Schedule of Classes</i> at www.usc.edu/soc.</p>

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services - (213) 740-0776

osas.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.