ITP 168 – Introduction to MATLAB
Units: 2
Fall 2024

Instructor: Reza Jafarkhani
Contact Info: jafarkha@usc.edu

Meeting Hours / Location:

Sec. 31821	TTh 9:00 am - 9:50 pm (PT)	OHE 540
Sec. 32058	TTh 10:00 am - 10:50 am (PT)	OHE 540

Office Hours:
  I. Piazza
  II. TTh 2:30 pm – 3:30 pm (PT) RRB 211 (or Zoom)
  III. By Appointment

Course Producer / Email / Office Hours:

Xinyang Xu	xinyangx@usc.edu	TBD
Jay Campanell	jcampane@usc.edu	TBD
Nickol Georgy	ngeorgy@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 Brightspace page. Course announcements will be posted to Piazza online forum, posted as an announcement to Brightspace, or emailed directly to your USC emails. Midterm and Final Examination are to be completed through the Brightspace 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 Brightspace's submission page**
- **Install MATLAB software**
- **Download files from Brightspace**

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

Description and Assessment of Assignments

This course will make use of Brightspace for assignments. All assignments will be posted to Brightspace under the "Assignments" section. Each assignment will include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link.

Piazza

The preferred way to communicate with the instructor and CPs is posting on Piazza (http://piazza.com). All the students, instructor, and CPs will have access to the same class on Piazza. Information about accessing Piazza is available on Brightspace. If you have questions about assignments, labs, tests, and other aspects about this course, please post on Piazza. You can make public posts which all members can see and answer or private posts which are only accessible to instructor and CPs.

Policies

Students are expected to attend and participate in lecture discussions, in-class exercises. However, attendance is not mandatory and will not count towards your grade.

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. Assignments turned in late will have 25% of the total points deducted from the graded score for each late day up to 3 days. No assignments will be accepted later than 72 hrs from the due date. You will have 3 "grace days" for the semester. i.e., no late penalty on HW for a cumulative 3 days. No grace days are available for Project.

Students have one week to contest a grade once it has been posted on Brightspace. 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.

No make-up exams (except for documented medical or family emergencies) will be offered. If they will not be able to attend an exam due to an athletic game or other valid reason, then they must coordinate with the instructor before the exam is given. They may arrange to take the exam before they leave, with an approved university personnel during the time they are gone, or within the week the exam is given. If students do not take an exam, then they will receive a 0 for the exam.

If students need accommodations authorized by OSAS (Office of Student Accessibility Services), notify the instructor at least two weeks before the exam. This will allow time for arrangements to be made.

Zoom synchronous sessions will be recorded and provided to all students asynchronously.

Grading Timeline

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

USC Technology Support Links

Zoom information for students
Software available to USC Campus

IT Help:

USC IT (ITS): https://itservices.usc.edu/contact/
Viterbi IT: https://viterbi.usc.edu/resources/vit/contact-us.htm

Sharing of course materials outside of the learning environment

SCampus Section 11.12(B)

Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy).

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.

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		
Week 15	Final Exam Review		**HW10 Due**
FINAL	Thursday, December 12 11:00 am - 1:00 pm (PT)		Date: For the date and time of the final for this class, consult the USC *Schedule of Classes* at www.usc.edu/soc.