

**Instructor:** Reza Jafarkhani  
**Contact Info:** [jafarkha@usc.edu](mailto:jafarkha@usc.edu)

**Meeting Hours / Location:**

**Sec. 31828** TTh 10:00 - 10:50 am (PT) DMC 203  
**Sec. 31829** TTh 11:00 - 11:50 am (PT) WPH 207

**Office Hours:**

- Piazza
- TTh 2:30 - 3:30 pm (PT) RRB 211 (or Zoom)
- By Appointment

**Learning Assistant / Email / Office Hours:**

Nickol Georgy	<a href="mailto:ngeorgy@usc.edu">ngeorgy@usc.edu</a>	TBD
Xinyang Xu	<a href="mailto:xinyangx@usc.edu">xinyangx@usc.edu</a>	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

**Prerequisite(s):** None

**Recommended Preparation:** MATH 118x or MATH 125

**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

## 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 R2024b. Your code **MUST** work in R2024b, otherwise it will be considered incorrect. All functions/concepts given in lecture are compatible with MATLAB R2024b. 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", 6<sup>th</sup> Edition by Amos Gilat      ISBN: 978-1-119-25683-0

## Grading Breakdown

You will be graded on the following

ITEM	% of Grade
HW Assignments	40
Exam I	20
Exam II	25
Project	15
<b>TOTAL</b>	<b>100</b>

## Grading Scale (sample)

This is a sample grading scale. Final scale will be determined by class average and score distribution.

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.

## Grading Timeline

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

## Piazza

The preferred way to communicate with the instructor and LAs is posting on Piazza (<http://piazza.com>). All the students, instructor, and LAs will have access to the same class on Piazza. Information about accessing Piazza is available on Brightspace. If you have questions about assignments, tests, project 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 LAs.

## 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.
- Zoom synchronous sessions will be recorded and provided to all students asynchronously.
- Students are responsible for completing individual 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 5 “grace days” for the semester. i.e., no late penalty on HW for a cumulative 5 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), they must post the OSAS document privately on Piazza under **osas\_accomodation** folder at least 48 hours before the exam.

# Course Schedule

(weekly breakdown)

	Topics/Daily Activities	Homework	Homework Due
<b>Week 1</b>	Starting with MATLAB		
<b>Week 2</b>	Creating Arrays	HW1 Assigned	
<b>Week 3</b>	Mathematical Operations with Arrays	HW2 Assigned	HW1 Due
<b>Week 4</b>	Using Script Files and Managing Data	HW3 Assigned	HW2 Due
<b>Week 5</b>	Two-Dimensional Plots	HW4 Assigned	HW3 Due
<b>Week 6</b>	Programming in MATLAB	HW5 Assigned	HW4 Due
<b>Week 7</b>	Programming in MATLAB		HW5 Due
<b>Week 8</b>	<b><u>Exam I</u></b> Thursday, October 23 <sup>rd</sup>		
<b>Week 9</b>	User-Defined Functions and Function Files	HW6 Assigned	
<b>Week 10</b>	User-Defined Functions and Function Files	HW7 Assigned	HW6 Due
<b>Week 11</b>	Polynomials, Curve Fitting, and Interpolation	HW8 Assigned	HW7 Due
<b>Week 12</b>	Applications in Numerical Analysis		HW8 Due
<b>Week 13</b>	Applications in Numerical Analysis	Project Assigned	
<b>Week 14</b>	Three-Dimensional Plots		
<b>Week 15</b>	<b><u>Exam II</u></b> Thursday, December 4 <sup>th</sup>		
<b>FINAL</b>	<b><u>Project</u></b> Due by: Thursday, December 11 <sup>th</sup>		Project Due

## 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](https://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](https://policy.usc.edu/scientific-misconduct).

### Support Systems:

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

[studenthealth.usc.edu/counseling](https://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](https://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](https://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](http://equity.usc.edu), [titleix.usc.edu](http://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](http://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](http://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](http://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](http://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](http://dps.usc.edu), [emergency.usc.edu](http://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](http://dps.usc.edu)

Non-emergency assistance or information.