

Introduction to MATLAB

ITP 168x (2 Units)



Spring 2016

Objective

Fundamentals of MATLAB: a high-performance numeric computation and visualization environment. Overview of linear algebra and matrix manipulation; using 2-D and 3-D plotting routines; programming in MATLAB; basic numerical analysis

Concepts

Overview of MATLAB features, problem-solving methodology. arrays; use of files, functions and data structures; programming; plotting; solution of linear algebraic equations; statistics and probability; numerical methods for calculus and differential equations; and basics of symbolic methods, 2D and 3D visualization of scientific data

Prerequisites

Recommended Preparation: Math 118x or Math 125

Instructor	Raymond Kim
Contacting the Instructor	raymonmk@usc.edu (213) 740-4542 Office: OHE 530G
Office Hours	Listed under Contacts in Blackboard
Lab Assistants	Listed under Contacts in Blackboard
Lecture	TBD
Lab	TBD

Required Textbooks

None

Optional Textbooks

"Mastering MATLAB" Duane Hanselman, Bruce Littlefield. Pearson Education.
ISBN: 9780136013303

This book is a great reference for all the functions we will be using in the class. It covers material far too advanced, and as such is optional. Any and all function documentation can be found on the Mathworks Website:

<http://www.mathworks.com/help/matlab/functionlist.html?refresh=true>

Website

All course material will be on Blackboard (<http://blackboard.usc.edu>).

Grading

The following percentage breakdown will be used in determining the grade for the course.

Labs	20%
Homework	25%
Midterm Exam	25%
Final Exam	30%
<hr/>	
Total	100%

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

93% and above	A
90% - 92%	A-
87% - 89%	B+
83% - 86%	B
80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
67% - 69%	D+
64% - 66%	D
63% and below	F

Policies

Labs

Labs are assigned during class and must be completed before the end of the class period. Students will apply the lecture material presented in class to complete the lab. Knowledge of previous material will also be required, but not the focus of the lab.

A late submission for a lab will be given a score of 0. No student is allowed to anticipate labs, or to begin work on labs before the class has started. Once a lab is graded, a student may not submit another lab for credit. There are no makeup labs. The only exception is a medical/family emergency, provided the student notify the instructor and provide official documentation for the emergency.

Makeup labs must be performed under the supervision of the instructor or member of the teaching staff only. Makeup labs must be completed no later than one week from the date the lab was assigned, or in the case of a medical emergency or illness, one week from the student's return date to school.

All labs will be posted to the course's Blackboard page under "Assignments". Students will be given the lab guidelines and any supporting documents or files necessary to complete the lab. Student must use this lab assignment link to submit their labs. Labs submitted via email or any other format will not be graded and the student will receive a 0 for that lab assignment.

Labs are graded on a 2 point scale. If the script or function file is able to run as detailed in the lab guidelines and conforms to all best practices detailed in the course, then the student will receive full credit. If the script or function file is able to run as detailed in the lab guidelines and does not conform to all best practices detailed in the course, then the student will receive 1 point. If the script or function file does not run as detailed in the lab guidelines, the student receives no credit.

Attendance and Drops

It is the student's responsibility to withdraw officially from a course.

Students are expected to attend all class meetings, and they must notify the instructor about absences due to illness prior to class. Student will be dropped from the class for excessive absences as well as for missing the first class meeting.

Class Policies

Students are expected to:

- Attend and participate in lecture discussions and critiques
- Attend and complete daily labs
- Manage and complete individual homework assignments

Students are responsible for completing labs and homework by stated deadlines. All labs and homework will be uploaded to the course's Blackboard site.

Late Work

Late homework will be accepted but will be penalized for each day that it is late. It is the responsibility of the student to contact the grader when posting late homework. After the due date, up to 24 hours after the time it was due, the student will receive at most 90% of the original credit for the homework. After 24 hours past the due date, up until 48 hours after the due date, the student will receive up to 80% of the original credit for the homework. After 48 past the due date, up until 72 hours past the due date, the student will receive up to 60% of the original credit for the homework. After 72 hours past the due date, the student will receive 0% of the original credit for the homework.

Homework Submission

It is the responsibility of the student to ensure that all work is submitted properly. All homework assignments will be submitted through Blackboard. In issues of **incorrect submission**, the student will receive a 0 for the assignment and will not be allowed to resubmit the assignment for a grade once the grade has been entered. This policy will be enforced at all times.

If a student resubmits an assignment before the grading of that assignment has been done, the student will be graded based on their last submission. If the submission is late, it will be penalized for being submitted late.

Extensions for homework will only be granted for those students who have a medical/family emergency or illness resulting in an inability to complete the assignment on time. Students must provide official documentation.

All homework will be posted to the course's Blackboard page under "Assignments". Students will be given the homework guidelines, point allocations, and any supporting documents or files necessary to complete the assignment. Student must use this assignment link to submit their homework. Homework submitted via email or any other format will not be graded and the student will receive a 0 for that homework assignment.

Computer Software and Labs

Students will be required to complete assignments and projects using MATLAB. This software is available in the on-campus computer labs as well as through the Laptop Loaner program sponsored by the University. A list of on-campus computing centers can be found here: (http://www.usc.edu/its/spaces/computing_centers/index.html). In addition, MATLAB R2013a may be downloaded from the USC ITS website. It is the student's responsibility to obtain a working copy of the software and a working computer to perform the in-class lab assignments.

Cell Phone / Distraction Policy

Out of respect for all students, please turn off all phones or MP3 players and refrain from answering, texting, checking email, or updating Facebook / Twitter / etc. during class.

Syllabus / Course Changes

This syllabus is a guideline so it is each student's responsibility to note any changes that are made.

Incomplete and Missing Grades

Excerpts for this section have been taken from the University Grading Handbook, located at <http://www.usc.edu/dept/ARR/grades/gradinghandbook/index.html>. Please see the link for more details on this and any other grading concerns.

A grade of Missing Grade (MG) "should only be assigned in unique or unusual situations... for those cases in which a student does not complete work for the course before the semester ends. All missing grades must be resolved by the instructor through the Correction of Grade Process. One calendar year is allowed to resolve a MG. If an MG is not resolved [within] one year the grade is changed to [Unofficial Withdrawal] UW and will be calculated into the grade point average a zero grade points.

A grade of Incomplete (IN) "is assigned when work is no completed because of documented illness or other 'emergency' **occurring after the twelfth week** of the semester (or 12th week equivalency for any course scheduled for less than 15 weeks)."

Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

In this class, all homework submissions will be compared with current, previous, and future students' submissions using MOSS, which is a code plagiarism identification program. If your code significantly matches another student's submission, you will be reported to SJACS with the recommended penalty of an F in the course.

It is okay to discuss solutions to specific problems with other students, but it is not okay to look through another student's code. It does not matter if this code is online or from a student you know, it is cheating. Do not share your code with anyone else in this or a future section of the course, as allowing someone else to copy your code carries the same penalty as you copying the code yourself.

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to your course instructor (or TA) as early in the semester as possible. DSP is located in STU 301 and is open from 8:30am to 5:00pm, Monday through Friday. Website and contact information for DSP http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu

Emergency Preparedness/Course Continuity in a Crisis

In case of emergency, when travel to campus is difficult, if not impossible, USC executive leadership will announce a digital way for instructors to teach students in their residence halls or homes using a combination of the Blackboard LMS (Learning Management System), teleconferencing, and other technologies. Instructors should be prepared to assign students a “Plan B” project that can be completed ‘at a distance.’ For additional information about maintaining your classes in an emergency, please access: <http://cst.usc.edu/services/emergencyprep.html>

Introduction to MATLAB

ITP 168x (2 Units)

Course Outline

Note: Schedule subject to change

W	Topic(s)	Lab	Homework
1	Intro	None	None
	Variables	None	
2	<u>MLK Holiday/ Open Lab Day</u>	None	Homework 1
	MATLAB Basics/Algorithms	LP1	Due in week 3
3	Array Basics	LP2	Homework 2
	Array Functions	LP3	Due in week 4
4	Conditionals	LP4	Homework 3
	Conditionals	LP5	Due in week 5
5	Loops	LP6	Homework 4
	Loops	LP7	Due in week 6
6	Cell Arrays	LP8	Homework 5
	Structures	LP9	Due in week 7
7	File I/O	LP10	Homework 6
	Functions	LP11	Due in week 9
8	<u>MIDTERM</u>	None	None
	Midterm Review	LP12	
9	Functions	LP13	Homework 7
	Functions	LP14	Due in week 10
<u>SPRING BREAK</u>			
10	Data Visualization	LP15	Homework 8
	Data Visualization	LP16	Due in week 12
11	Data Analysis	LP17	None
	Data Analysis	LP18	
12	Differential Equations	LP19	Homework 9
	Differential Equations	LP20	Due in week 13
13	Linear Algebra	LP21	Homework 10
	Linear Algebra	LP22	Due in week 14
14	Strings	LP23	Homework 11
	Strings	LP24	Due in week 15

W	Topic(s)	Practical	Homework
15	Advanced Topics	LP25	None
	Final Exam Review	LP26	
	<u>FINAL EXAM – as according to the final exam schedule</u>		