



School of Engineering  
*Information  
Technology Program*

**ITP 168 – Introduction to MATLAB**

**Units: 2**

**Spring 2020 – Monday/Wednesday – 3:30pm**

**Instructor:** Raymond Kim

**Office:** OHE 530G

**Office Hours:** TBD

**Contact Info:** [raymonmk@usc.edu](mailto:raymonmk@usc.edu)

**Teaching Assistant:** TBD

**Office:** TBD

**Office Hours:** TBD

**Contact Info:** TBD

**IT Help:** Provided by Viterbi IT

**Hours of Service:** 8am–5pm M-F

**Walk-in:** DRB 205

**Contact Info:** (213) 740-0517

**Email:** [engrhelp@usc.edu](mailto:engrhelp@usc.edu)

## Course Description

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

## Learning Objectives

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

**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 and lab assignments 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 done by hand.

## 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**

MATLAB is available for download at: <https://software.usc.edu/>

## Required Readings and Supplementary Materials

Students are required to purchase a zyBooks account for the duration of the semester. Readings will be posted to zyBooks and participation will be contingent upon completion of the readings and online exercises (Participation Activities and zyLabs). Subscribe at <http://zybooks.zyante.com> using the specific code given in class.

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

## Grading Breakdown

You will be graded on the following

| ITEM                 | % of Grade |  |
|----------------------|------------|--|
| Lab Assignments      | 15         |  |
| Homework Assignments | 25         |  |
| Midterm Exam         | 25         |  |
| Final Exam           | 30         |  |
| zyBooks              | 5          |  |
|                      |            |  |
|                      |            |  |
| <b>TOTAL</b>         | <b>100</b> |  |

## 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 and lab 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.

Lab assignments are worth 3 points each. In order for a lab to receive full credit, they must perform the required tasks described in the assignment sheet and follow all conventions set forth in class including commenting and documentation. Labs are generally due in 72 hours after assignment. Due dates are specific to each lab and will be clearly marked on the lab instructions. Students must complete the assigned lab on their own and may not consult with other students on the labs. Any plagiarism or academic dishonesty will result in immediate disciplinary action as defined by USC policy.

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.

Homework assignments are assigned at the end of the week and will be due one or two weeks after being assigned. The assignment sheet will have the due date listed. Homework will be accepted after the deadline with the following penalties:

- After due date/time up to 24 hours: -10% of total possible points for assignment

- 24 hours after due date/time up to 48 hours: -20% of total possible points for assignment
- 48 hours after due date/time up to 72 hours: -40% of total possible points for assignment
- 72 hours or more after due date/time: No credit for assignment

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.

### **Grading Timeline**

Grading of labs will be done by the end of the week on which the lab was assigned.

Grading of homework will be done within one week 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.

Students are expected to complete the zyBooks readings and activities by the end of the week on which they were assigned. The end of the week will always be denoted as Saturday at midnight. If a student has not completed all of the readings and activities, they will be given a participation grade based on the percentage they have completed. The reading materials contains three different types of activities: Participation Activities, Challenge Activities, and zyLabs. Students are required to complete the Participation Activities and zyLabs. The Challenge Activities are optional, and will NOT count for extra credit.

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.

ITP offers Open Lab use for all students enrolled in ITP classes. These open labs are held beginning the second week of classes through the last week of classes.

Hours are listed at: <http://itp.usc.edu/labs/>.

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 or lab code to Piazza publicly. Students may post homework or lab code privately on Piazza to instructors only. Any student caught posting homework or lab code on Piazza will be punished through SJACS.

## Course Schedule: A Weekly Breakdown

|                | Topics/Daily Activities   | Labs/Homework          | Deliverable/ Due Dates  |
|----------------|---|------------------------|---|
| <b>Week 1</b>  | Day 1: Intro/Variables<br>Day 2: Algorithms /Arithmetic                                 | No Lab                 | Week 1 Reading Due  |
| <b>Week 2</b>  | <b>Day 1: No Class: MLK Holiday</b><br>Day 2: Vectorization/Elementary Code Patterns    | Lab1<br>HW1 Assigned   | Week 2 Reading Due  |
| <b>Week 3</b>  | Day 1: Vector Functions<br>Day 2: Descriptive Statistics                                | Lab2<br>HW2 Assigned   | Week 3 Reading Due<br>HW1 Due   |
| <b>Week 4</b>  | Day 1: Conditionals<br>Day 2: Logic Arrays  | Lab3<br>HW3 Assigned   | Week 4 Reading Due<br>HW2 Due   |
| <b>Week 5</b>  | Day 1: Loops<br>Day 2: More Loops   | Lab4<br>HW4 Assigned   | Week 5 Reading Due<br>HW3 Due   |
| <b>Week 6</b>  | <b>Day 1: No Class: Presidents Day Holiday</b><br>Day 2: Cell Arrays/Strings/Structures | Lab5<br>HW5 Assigned   | Week 6 Reading Due<br>HW4 Due   |
| <b>Week 7</b>  | Day 1: File I/O<br>Day 2: Functions   | Lab6<br>HW6 Assigned   | Week 7 Reading Due<br>HW5 Due   |
| <b>Week 8</b>  | Day 1: Midterm<br>Day 2: Halfway Review   |                        |   |
| <b>Week 9</b>  | Day 1: More Functions<br>Day 2: Debugging   | Lab7<br>HW7 Assigned   | Week 9 Reading Due<br>HW6 Due   |
|                | <b><u>SPRING BREAK</u></b>  |                        |   |
| <b>Week 10</b> | Day 1: 2D Plotting<br>Day 2: 3D Plotting  | Lab8<br>HW8 Assigned   | Week 10 Reading Due<br>HW7 Due  |
| <b>Week 11</b> | Day 1: Animating Plots<br>Day 2: Data Analysis  | Lab9<br>HW9 Assigned   | Week 11 Reading Due<br>HW8 Due  |
| <b>Week 12</b> | Day 1: Differentiation/Zero Finding<br>Day 2: Integration                               | Lab10<br>HW10 Assigned | Week 12 Reading Due<br>HW9 Due  |
| <b>Week 13</b> | Day 1: Solving Linear Systems<br>Day 2: Triangular Factorization/Non-Linear Systems     | Lab11<br>HW11 Assigned | Week 13 Reading Due<br>HW10 Due   |
| <b>Week 14</b> | Day 1: Regular Expressions<br>Day 2: Live Scripting                                     | Lab12                  |   |
| <b>Week 15</b> | Day 1: Advanced Data Types<br>Day 2: Final Exam Review                                  | Lab13                  | HW11 Due  |
| <b>FINAL</b>   |   |                        | Date: For the date and time of the final for this class, consult the USC <i>Schedule of Classes</i> at <a href="http://www.usc.edu/soc">www.usc.edu/soc</a> . |

## 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” <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, <http://policy.usc.edu/scientific-misconduct>

In this class, all homework submissions will be compared with current, previous, and future students’ submissions. If your work is found to be a copy of another person’s work, or if you submit someone else’s work as your own, the instructors will file a report with SJACS with a recommended penalty of an F in the course.

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.

### Support Systems:

*Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline - 1-800-273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

*Student Support and Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic <https://studentaffairs.usc.edu/ssa/>

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, <http://emergency.usc.edu>

*USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.*

Provides overall safety to USC community. <http://dps.usc.edu>