ENGR 131: Elementary Computer Programming

Instructor: Dr. Chris Fietkiewicz
Email: Use help addresses listed on the website
Instructor Office Hours: Immediately after lectures and by appointment
Teaching Assistant Office Hours: See the website

Websites

Primary website: http://blackboard.case.edu
Textbook source code: http://store.elsevier.com/product.jsp?isbn=9780124058767&_requestid=362145
(click on the link for "Resources – Online Companion Materials – M-files for examples")

Getting Help

Email: Use the "help" email address for your lab section (see the website for the list). Email sent to this address goes to several TAs for the fastest reply possible.

Office hours: Supplemental Instruction (SI) sessions will be available on different days throughout the week. Each TA will also hold weekly office hours. See the website for the complete schedule of SI sessions and TA office hours.

Tutoring: Complimentary tutoring is available through ESS Peer Tutoring services. To sign up, go to the ESS web page, http://studentaffairs.case.edu/education/, and click on "TutorTrac". Tell your tutor to contact Chris if he or she has any questions.

Course Description

The goals of this course are to (1) develop skills in computational thinking through problem solving and (2) learn the practical skill of programming in MATLAB. Topics covered include algorithm design, data structures, operators, control flow, and functions.

Textbook

Book: Attaway, *MATLAB: A Practical Introduction to Programming and Problem Solving*, Third Edition, Butterworth-Heinemann, 2013. ISBN 9780124058767.

Website with M-files: *see link above*

Specific Topics

Ch 1: MATLAB calculations
Ch 2: MATLAB programming
Ch 3: Selection
Ch 4: Repetition
Ch 5: Vectorization
Ch 6: Advanced programming
Ch 7: Strings

Ch 8: Data Structures
Ch 9: File Input/Output
Ch 10: Advanced functions
Ch 11: Advanced plotting
Ch 12: Systems of linear algebraic equations
Ch 13: Statistics and advanced algorithms
Ch 14: Audio and graphics
Ch 15: Advanced mathematics

Labs & Software

All students will have 24-hour access to the Olin 8th floor lab (x4056). The Nord Lab computers can also be used. The Olin lab and all equipment are to be used for coursework only. Any unauthorized use of the lab or equipment may result in failure for the course. MATLAB software is available from https://softwarecenter.case.edu, and students are encouraged to install in on their personal computer.

NOTE: To use MATLAB off campus, you may need to use the AnyConnect software for virtual private networking (VPN) which is available at https://vpnsetup.case.edu.

Attendance

Lab: Lab attendance is required, and students must be present to receive credit for lab assignments. If you have a valid excuse for missing a lab meeting, contact your TA immediately using the "help" email address.

Lecture: Attendance is not required for actual lectures (including lectures after a quiz). However, lecture activities will be collected randomly to check attendance which can improve your course grade (see *Borderline Grades* below). Students with valid excuses for missing a lecture can request makeup work in order to obtain attendance credit.

Respect: Except for excused absences, it will be assumed that students who are not present during lecture or lab do not need further assistance with the material covered. Please be respectful and use our scheduled time on Tuesdays and Thursdays to seek help. At the end of the semester, grades within 1 point of the next highest letter grade *might* be raised at the instructor's discretion for students with perfect attendance and perfect assignment completion.

Grading

The grade cutoffs are 90-80-70-60 percent for A-B-C-D respectively. The following weights will be applied to the average percentage for each category. Items from different categories may have the same total number of points, but they do not have the same contribution to the final grade. For example, an exam and a quiz may each have a maximum of 100 points, but the contribution of each depends on the number of exams, the number of quizzes, and the weight of each category.

(15%) Lab Assignments: Lab assignments are collected every week in lab. Students must be present to receive credit. Assignments cannot be made up except for excused absences.

(5%) Homework: Homework problems will graded for completeness and not correctness.

(20%) Lecture quizzes: Quizzes will occur at the beginning of selected lectures. They will cover material in the homework problems.

(50%) Exams: There are three required midterm exams. An unexcused absence will result in a zero for that exam. Students will have the option (not required) to take a comprehensive final exam that will count as a fourth exam. The average of all exams taken (either 3 or 4) is worth 50% of the final grade.

(10%) Final Project: A software development project is assigned at the end of the semester. Students must choose a particular design within the guidelines provided. Students are required to work in groups of two or three. Students are not permitted to work independently.

Late submissions: Late submissions for lab assignments and final projects will receive a penalty of –0.07 points for each minute past the due date. Exams and quizzes will not be accepted late except for excused absences (see "Absences" below.

Absences: Non-emergency absences must be approved in advance, including Case-sponsored trips. Makeup exams will only be provided for excused absences in accordance with university policy. Students with valid excuses for missing a lecture can request makeup work in order to obtain attendance credit. Makeup requests for emergencies must be made within 24 hours of the absence in order to be considered.

Borderline grades: At the end of the semester, students who are within 1% of the next highest letter grade may receive the higher letter grade, at the instructor's discretion, if all of the following conditions are met:

- The student has perfect lecture attendance (based on collected lecture activities).
- The student submitted all assignments, including every lab, homework, quiz, exam, and final project component.
- The student received a score of 80 or higher on the final exam.
- The student has not violated any course policies.

Assignment Philosophy

There are different types of assignments in the course:

- Tutorials (*not* graded)
- Lab assignments (graded for correctness)
- Homework problems (graded for completeness, *not* correctness)

These are specifically designed to work together to prepare you for the quizzes and exams. Each one requires an additional level of ability. A homework problem is the most important opportunity for a student to practice with a large problem independently prior to a lecture quiz. Therefore students are encouraged to complete all homework problems independently. Asking for help is fine, but your results will be superior if all work is your own.

Academic Integrity

All assignments submitted should be the student's own work. This includes the design of programs as well as the actual computer code. Students are encouraged to seek assistance from their TA and the instructor to ensure that assignments are approached properly. Students found in violation of the university's academic integrity policy will be reported to the Dean's office and will receive either a permanent zero on the assignment in question or failure for the course.

Friendly Advice: The Proactive Student

The truly successful people in life are the ones who know how to get what they want. They also know they are the only ones responsible for making it happen. Many students come to college thinking they can succeed by simply doing what they are told. It is not uncommon to hear the complaint, "You didn't tell us we had to know *that*!" Success in college, as well as in life, comes from *self*-discovery, which includes discovering things *by* oneself as well as discovering things *about* oneself. One of the instructor's jobs is to show students where to look. It is the students' responsibility to know whether they have found what they needed and to seek out help when they are uncertain. Please be proactive about your education, and do not wait for your instructors to tell you when you don't know something.