CE 311K INTRO TO COMPUTER METHODS

Spring 2023, Unique No. 16115-16120-16125

Lectures: CPE 2.212; MWF 11am-12pm

Lab Sessions:
ECJ 2.210; M 2-4pm (Unique ID: 16115)
ECJ 2.210; M 4-6pm (Unique ID: 16120)
ECJ 2.210; W 4-6pm (Unique ID: 16125)

Instructor:
Prof. Berkin Dortdivanlioglu (he/him/his)
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Office Hours: TBA or by appointment.

Teaching assistant:
- Ashkan Madadi, Office Hours: TBA
  ECJ 7.204, Email: `ashkan31194@utexas.edu`
- Qiong Tang, Office Hours: TBA
  ECJ 7.204, Email: `qiongtang@utexas.edu`

Course webpage: `https://canvas.utexas.edu`

Course description: As an introduction course in computer methods, this class introduces common numerical methods and provides basic elements of programming and computing using MATLAB. *On completion of this course*, you will have learned methods to formulate engineering/mathematical problems in a structured form using pseudocode/algorithms, employ numerical procedures to obtain solutions, and select appropriate computational tools for solving a given engineering problem.

Required textbook: There are no textbooks required.

Prerequisites: CE 301; Credit or registration for M 408D or M 308L.

Attendance policy: Attendance of lectures and lab sessions is mandatory.

Tentative Course Outline:

1. Introduction to computing.
Course overview, simulations, operating systems, round-off and truncation errors.

2. Programming in MATLAB.
Introduction to MATLAB environment, structured programming, scalar/vector/matrix definitions and operations, control flow, scripts & functions, graphing, symbolic operations.

3. Numerical Methods.
Numerical error, root finding, curve fitting, numerical integration and differentiation, solving linear system of equations $Ax = b$, ordinary differential equations, finite-difference schemes.

Grading system:

The letter grade will be based on Lab Assignments (*10%*), Homework (*15%*), Midterm exam with lower grade (*20%*), Midterm exam with higher grade (*25%*), and Final exam (*30%, Saturday, April 29, 3:30 pm-5:30 pm*).

$A \geq 90$	$80 \leq B < 90$	$70 \leq C < 80$	$60 \leq D < 70$	$F < 60$

The $\pm$ cut-offs will be assigned based on the actual grade distribution, your progress/participation in the class over the semester.

Homework & Lab Assignments: Homework and lab assignments must be turned in by 11:59 pm (CST) on the due date on Canvas. You have a total of five free late days to use for homework and lab assignments, if needed. Students are encouraged to have discussions on the course content in group, but homework and lab assignments must be carried out independently by each student.

Exams: If you miss an exam, an oral/written make-up exam will be offered only under special circumstances (e.g., medical reasons).

Sharing of course materials:

Sharing of course materials is **prohibited**. No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have my explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University's Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.

Academic integrity:

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. Further information can be found at `https://deanofstudents.utexas.edu/conduct/standardsofconduct.php`.

Class recordings:

Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction could lead to Student Misconduct proceedings.

Course evaluation: An evaluation of the course and instructor will be conducted at the end of the semester using the approved UT Course/Instructor evaluation forms.

Religious holy days: By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of a religious holy day.

Disability statement: The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact the Division of Diversity and Community Engagement, Disability & Access, 512-471-6259 (email: `access@austin.utexas.edu) or http://diversity.utexas.edu/disability/.`

Drop policy: From the 1st through the 12th class day, an undergraduate student can drop a course via the web and receive a refund, if eligible. From the 13th through the university's academic drop deadline, a student may Q drop a course with approval from the Dean, and departmental advisor.

Emergency plan: Emergency Preparedness means being ready. It takes an effort by all of us to create and sustain an effective emergency preparedness system. Please use `https://preparedness.utexas.edu/welcome-emergency-preparedness` as a resource for emergency preparedness at the university. To report an issue, non-emergency: (512) 471-4441 and emergency: 911.

COVID caveats: *Important Safety Information:* COVID-19 Update: While we will post information related to the contemporary situation on campus, you are encouraged to stay up-to-date on the latest news as related to the student experience: `https://protect.utexas.edu/`