THE UNIVERSITY OF TEXAS AT AUSTIN
Department of Aerospace Engineering and Engineering Mechanics
Computational Engineering

COE 301 - Introduction to Computer Programming
Spring 2024

SYLLABUS

Unique Number:	14395
Instructor:	Ari Kahn (Instructor on Record) **S.** Charlie Dey charlie@tacc.utexas.edu (co-instructor) Susan Lindsey slindsey@tacc.utexas.edu (co-instructor)
Time:	MWF 9:00a-10:00a
Location:	ASE 1.126
Slack Workspace:	https://join.slack.com/t/tacc-learn/shared_invite/zt-2aosuhf9v-2t3UTL7aCX~LPVALKbX0~A
Slack Channel:	**#coe301-sp2024**
Teaching Assistant:	Hamzah Khan hamzah@utexas.edu
Web Page:	Coming Soon

Catalog Description:
Development of structured solutions to engineering and mathematical problems and an understanding of coding practices. Programming in C++ and MATLAB.

Course Objectives:
The primary objective of this course is to learn basic computer programming concepts and apply them to engineering computations.
Prerequisites: No prerequisites are required, although some knowledge of calculus and linear algebra is useful.

Knowledge, Skills, and Abilities Students Gain from this Course (Learning Outcomes):
By the end of the course, you should be able to think in a structured manner about solutions to engineering/mathematical problems using C++ and MATLAB.

Impact on Subsequent Courses in Curriculum:
COE 301 is a prerequisite for COE 311K, Engineering Computation and COE 322, Scientific Computation.

Relationship of Course to Program Outcomes and ABET Program Criteria Achieved:

STUDENT OUTCOME	

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	√
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
3. an ability to communicate effectively with a range of audiences	
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

ABET Program Criteria Achieved:

Program criteria are unique to each degree program and are to be compiled from the program criteria given for each degree program and listed in table format below. The faculty should check which of the program criteria are achieved in the course.

Criterion		**Criterion**		**Criterion**	
a. Aerodynamics		g. Orbital Mechanics		m. Preliminary/Conceptual Design	
b. Aerospace materials		h. Space Environment		n. Other Design Content	
c. Structures		i. Attitude Determination and Control		o. Professionalism	
d. Propulsion		j. Telecommunications		p. Computer Usage	x
e. Flight Mechanics		k. Space Structures			
f. Stability and Control		l. Rocket Propulsion			

Computer:
Computer capable of SSH, Terminal application, Web browser

Class Format:
This class meets in person, however class sessions will be recorded for anyone who misses class. It should be noted that the class will *not* be streamed live, and recordings will only be shared by request.
Class Format:

This class is 30% lecture and 70% hands-on
Each lecture will include *at least* 2 hands on "challenges", (class participation)
There will be approximately ~6 homework assignments
There will be 2 minor projects (MATLAB, C++)
There will be 1 major project (C++)

Class Schedule:

- Computational Thinking (1 week)
- Operating Systems Overview/ Introduction to Linux (1 week)
- MATLAB (4 weeks)
- Midterm Project
- C++ (6 weeks)
- Object Oriented Programming (1 weeks)
- Final Project (1 week)
- Special Topics (time dependent)

Grade	Points	
A	100	93
A-	92	90
B+	89	87
B	86	83
B-	82	80
C+	79	77
C	76	73
C-	72	65
D	64	54
F	<54	

Grading:

Scale

- Homework: 20%
- Minor Projects: 30%
- Final Project: 35%
- Participation/Challenges: 15%

Challenges

- graded only towards participation points, graded on a scale from 0 to 3.
  - 0 : Didn't turn in
  - 1 : Attempted, but doesn't run
  - 2 : Attempted, but doesn't give correct results
  - 3 : Perfect, everything runs an intended

Homework

- accounts for 20% of your grade
- are built from the challenges
- base concepts required for projects.
- graded on a scale from 0 to 10

The Minor Projects

- accounting for 30% of your grade
- are built from the homework

- *may* require some independent research to complete
- graded on a scale from 0 to 100

Examinations:
There are no written exams for this class, there are two minor projects and one final project. The final project is due on the day of the final exam.

Homework Policy:
- Coding Challenges are due at the beginning of the next class period.
- Homework is due one week from the date assigned unless otherwise noted. If you submit an assignment that does not correctly run, you have one opportunity to fix the bug and get your code running correctly, and resubmit the assignment.

Attendance:
Attendance is not required, however, in-class labs are counted as participation points which is 15% of your total grade, if you do not attend, you can't really participate.

Office Hours:
1 hour immediately following class – 10 am to 11 am, MWF
Slack (TBA)

DISABILITY & ACCESS (D&A)

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability & Access (D&A). Please refer to the D&A website for more information: http://diversity.utexas.edu/disability/. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

Special Notes:
The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TDD or the Cockrell School of Engineering Director of Students with Disabilities at 471-4321.

Evaluation:
Note that the Measurement and Evaluation Center forms for the Cockrell School of Engineering will be used during the last week of class to evaluate the course and the instructor. They will be conducted in an electronic format for Summer 2022. You may also want to note any other methods of evaluation you plan to employ.

Course Policies and Disclosures

Honor Code
The University of Texas at Austin strives to create a dynamic and engaging community of teaching and learning where students feel intellectually challenged; build knowledge and skills; and develop critical thinking, creativity, and intellectual curiosity. As a part of this community, it is important to engage in assignments, exams, and other work for your classes with openness, integrity, and a willingness to make mistakes and learn from them. The UT Austin honor code champions these principles:

I pledge, as a member of the University of Texas community, to do my work honestly, respectfully, and through the intentional pursuit of learning and scholarship.

The honor code affirmation includes three additional principles that elaborate on the core theme:
I pledge to be honest about what I create and to acknowledge what I use that belongs to others.
I pledge to value the process of learning in addition to the outcome, while celebrating and learning from mistakes.
This code encompasses all of the academic and scholarly endeavors of the university community.

The honor code is more than a set of rules, it reflects the values that are foundational to your academic community. By affirming and embracing the honor code, you are both upholding the integrity of your work and contributing to a campus culture of trust and respect.

Academic Integrity Expectations
Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can range from a written warning, probation, deferred suspension and/or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: http://deanofstudents.utexas.edu/conduct.
[It is strongly recommended that you outline any individual expectations for assignment completion- including parameters around group work, authorized resources, citation requirements, etc. in the assignment directions. Clear and detailed expectations not only reduce the likelihood of a possible violation, but they also aid the Student Conduct team in holding students accountable that fail to adhere to the assignment directions.]

Confidentiality of Class Recording
[If class recordings that include student personally identifiable information are to be made, UT Legal has indicated that the following disclosure should be included in the syllabus and wherever recordings are posted on Canvas.]
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 by a student could lead to Student Misconduct proceedings.

Getting Help with technology
Students needing help with technology in this course should contact the ITS Service Desk or [insert contact information for your local support unit(s) and for course materials, software, hardware, or other technology used in your course].

Sharing of Course Materials is Prohibited
You may discuss assignments/projects between each other, however, you *may not* copy each other's code to be handed in.

Artificial Intelligence

The creation of artificial intelligence tools for widespread use is an exciting innovation. These tools have both appropriate and inappropriate uses in classwork. The use of artificial intelligence tools (such as ChatGPT) in this class: Shall be permitted on a limited basis. You will be informed as to the assignments for which AI may be utilized. You are also welcome to seek my prior-approval to use AI writing tools on any assignment. In either instance, AI writing tools should be used with caution and proper citation, as the use of AI should be properly attributed. Using AI writing tools without my permission or authorization, or failing to properly cite AI even where permitted, shall constitute a violation of UT Austin's Institutional Rules on academic integrity.

For more information about AI in education, see the Center for Teaching and Learning's "5 Things to Know about ChatGPT" webpage that includes additional suggested syllabi statements for your consideration.]

Religious Holy Days
By UT Austin policy, you must notify me of your pending absence for a religious holy day as far in advance as possible of the date of observance. If you must miss a class, an examination, a work assignment, or a project in order

to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Names and Pronouns
Class rosters are provided to the instructor with the student's legal name, unless they have added a chosen name with the registrar's office. If you have not yet done so, I will gladly honor your request to address you with the name and pronouns that you prefer for me to use for you. It is helpful to advise me of any changes or needs regarding your name and pronouns early in the semester so that I may make appropriate updates to my records and be informed about how to support you in this class.

- For instructions on how to add your pronouns to Canvas, visit this site.
- If you would like to update your chosen name with the registrar's office, you can do so here, and reference this guide.
- For additional guidelines prepared by the Gender and Sexuality Center for changing your name on various campus systems, see the Resources page under UT Resources here.

Important Safety Information

Carrying of Handguns on Campus
Students in this class should be aware of the following university policies related to Texas' Open Carry Law:

- Students in this class who hold a license to carry are asked to review the university policy regarding campus carry.
- Individuals who hold a license to carry are eligible to carry a concealed handgun on campus, including in most outdoor areas, buildings and spaces that are accessible to the public, and in classrooms.
- It is the responsibility of concealed-carry license holders to carry their handguns on or about their person at all times while on campus. Open carry is NOT permitted, meaning that a license holder may not carry a partially or wholly visible handgun on campus premises or on any university driveway, street, sidewalk or walkway, parking lot, parking garage, or other parking area.
- Per my right, I prohibit carrying of handguns in my personal office. Note that this information will also be conveyed to all students verbally during the first week of class. This written notice is intended to reinforce the verbal notification, and is not a "legally effective" means of notification in its own right.

TITLE IX DISCLOSURE

Beginning January 1, 2020, Texas Education Code, Section 51.252 (formerly known as Senate Bill 212) requires all employees of Texas universities, including faculty, to report to the Title IX Office any information regarding incidents of sexual harassment, sexual assault, dating violence, or stalking that is disclosed to them. Texas law requires that all employees who witness or receive information about incidents of this type (including, but not limited to, written forms, applications, one-on-one conversations, class assignments, class discussions, or third-party reports) must report it to the Title IX Coordinator. Before talking with me, or with any faculty or staff member about a Title IX-related incident, please remember that I will be required to report this information.

Although graduate teaching and research assistants are not subject to Texas Education Code, Section 51.252, they are mandatory reporters under federal Title IX regulations and are required to report a wide range of behaviors we refer to as sexual misconduct, including the types of misconduct covered under Texas Education Code, Section 51.252. Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex – including pregnancy and parental status – in educational programs and activities. The Title IX Office has developed supportive ways and compiled campus resources to support all impacted by a Title IX matter.

If you would like to speak with a case manager, who can provide support, resources, or academic accommodations, in the Title IX Office, please email: supportandresources@austin.utexas.edu. Case managers can also provide support, resources, and accommodations for pregnant, nursing, and parenting students.

For more information about reporting options and resources, please visit: https://titleix.utexas.edu, contact the Title IX Office via email at: titleix@austin.utexas.edu, or call 512-471-0419.

Campus Safety

The following are recommendations regarding emergency evacuation from the Office of Emergency Management, 512-232-2114:

- Students should sign up for Campus Emergency Text Alerts at the page linked above.
- Occupants of buildings on The University of Texas at Austin campus must evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- For more information, please visit the Office of Emergency Management.

University Resources
For a list of university resources that may be helpful to you as you engage with and navigate your courses and the university, see the University Resources Students Canvas page.

Prepared by: S. Charlie Dey Date: 01/16/2024