CSE 2102: Introduction to Software Engineering

Term: Fall 2023

Instructor: Prof. Jonathan Clark (jonathan.2.clark@uconn.edu)

Office Hours & Availability: After lecture on Tuesdays and Thursdays. Additional hours are TBD. Use Discord for questions and a response should be given with 24 hours. Use emails only for personal matters that do not relate directly to the course material.

Course Objectives

1. Conceptual understanding of software engineering concerns beyond the writing of computer code. E.g. DevOps, CI/CD, Agile, etc.
2. Provide students with an advantage in gaining software engineering internships and/or full-time employment by providing industry-focused insight.
3. Hands-on experience with team-based software development.
4. (Optional) A foundation in the AWS Cloud platform

Schedule

Week	Module	Start (Mon)	End (Sun)	Topics	Text-book	AWS Academy
1	1	28-Aug	3-Sep	Projects/ Products, Agile	1, 2	Mod 1: Welcome
2	2	4-Sep	10-Sep	Features, scenarios, stories	3	Mod 2: Intro to developing on AWS
3	3	11-Sep	17-Sep	Architecture	4	Mod 3: S3
4	4	18-Sep	24-Sep	DevOps and SCM	10	Mod 4: IAM
5		25-Sep	1-Oct	Exam 1 - Thurs 9/28		
6	5	2-Oct	8-Oct	Cloud	5	Mod 5: NOSQL DBs
7	6	9-Oct	15-Oct	Microservices 1	6	Developer: Mod 6 (REST)
8	7	16-Oct	22-Oct	Microservices 2		Mod 7: Event-Drive serverless (Lambda)

Week	Module	Start (Mon)	End (Sun)	Topics	Text-book	AWS Academy
9	8	23-Oct	29-Oct	Cloud-Native Arch, Docker		Mod 8: Containers
10		30-Oct	5-Nov	Exam 2 - Thurs 11/2		
11	9	6-Nov	12-Nov	Security / Privacy	7	Mod 12: Secure Apps
12	10	13-Nov	19-Nov	Reliable Programming	8	
		20-Nov	26-Nov	--- Thanksgiving Break ---		
13	11	27-Nov	3-Dec	Testing	9	
14		4-Dec	10-Dec	Exam 3 - Thurs 12/7		
15		11-Dec	17-Dec	Final Exam Week		

(Optional) Each module has optional textbook reading that reinforces the lecture content. Material for the exams will be taken from lecture, lab, and the semester project. Thus, the textbook is recommended but not required.

Note: Additional articles or video content may be posted in HCT during a given week. These articles and video tutorials will help you with labs, the semester project and deepen increase your mastery of the course material. These materials are considered required reading and viewing.

Materials, Platforms, and Software

- Textbook: "Engineering Software Products: An Introduction to Modern Software Engineering," by Ian Sommerville, (c) 2020.
- Computer and internet connection
- HuskyCT
- Gradescope (accessed through HuskyCT)
- Discord (See HuskyCT for server invite)
- Programming Languages: Python3 (backend), VueJS (frontend)
- AWS Academy (AA): a software platform that is provided to all students. Each module of AA contains video instruction on the AWS platform (optional) that will assist students in completing some labs and the semester-long group project. Each student should have received an email invitation to join two different AA "courses":

  (1) The "Developing with AWS" course contains free AWS video instructions as well as several AWS labs that we will be doing this semester.

  (2) The "AWS Learner Lab" is a long-running sandbox environment that allows students to develop AWS applications over the course of the semester. Each student receives a $100 credit for the semester for AWS expenses and no credit card nor student fees are required.

Grades

Summary

Group Project	40%	
3 Exams (10% each)	30%	
Final Exam	15%	
Lab Participation	10%	(Best 8 out of 11)
Lecture Participation	5%	(Best 16 out of 22)

Group Project

All for-credit students enrolled in the course will be assigned a team. Teams will be comprised of 4 students who will work together to complete a semester-long group project. Teams will have weekly deliverables which they will demonstrate to their TA during the weekly lab session.

Your group project grade will be determined by: weekly progress reports (~25 - 50%), team communication and collaboration (~10 - 25%), and the final project deliverable (~25% - 50%). Percentages given are an approximation; the exact rubric will be communicated later in the semester.

At least one member of the team must be present during the weekly lab session to provide the team update to the TA or the group will receive a zero for that weekly progress report. All team members will receive the same grade on the weekly progress reports. However, students will receive a final project grade that considers individual effort and contribution.

You are not allowed to discuss the project with other teams. Further guidelines on the project will be provided.

Exams

Three equally-weighted exams will be held during lecture on the weeks shown in the schedule above. Makeup exams are not offered outside of exceptional circumstances.

Final Exam

The final exam will be cumulative and graded in three sections corresponding to the material from the first three exams. If a student scores poorly on one of the semester exams and they do much better on the corresponding section of the final exam, then I will replace one of their in-semester exam scores.

Example:

Exam 1 score = 70
Exam 2 score = **80**
Exam 3 score = 90

Final Exam section 1 = 72
Final Exam section 2 = 100
Final Exam section 3 = 95
Final Exam score = (72 + 100 + 95) / 3 = 89

The final grades for all 4 exams would be:
Exam 1 score = 70
Exam 2 score = **100**
Exam 3 score = 90
Final Exam score = 89

If a student does not attend a semester exam, they will receive a zero for that exam. However, they may use the flexibility described above to change that zero to a much higher score.

Lab Participation

Weekly labs are held on Wednesdays throughout the semester. Teams will meet with their TA each week (~5-8 min) to discuss the project progress. In addition, students will be assigned tasks during labs that are intended to be completed during the lab session itself. A TA will be available during the lab for questions and support.

Participation grades (100 = excellent, 90 = very good, 80 = good, 50 = fair, or 0 = nothing) will be given to each student. The final lab participation grade will be based on the best 8 out of 11 scores. You are strongly encouraged to attend every lab session. Material covered during lab will assist you in the group project and will reinforce lecture material being tested on exams. Students who miss lab for personal reasons, or are

unable to finish the lab content during the lab session itself, are encouraged to work through the material on their own. However, the lab grade is solely based on the work completed during the lab section itself.

Lecture Participation

The material for the exam is largely take from lectures. Lectures will not be live-streamed but the recordings may be posted after the class is over. Your attendance and attentiveness during lecture will have the largest impact on your final grade and the mastery of the course material. To help you prioritize lecture participation, short quizzes will be given during each lecture. These quizzes will be online, so students should bring a laptop or phone to lecture. The quizzes will be graded, but attentive students should be able to attain a 100% on each one. The lecture participation grade will consist of the best 16 out of 22 quizzes throughout the semester.

Flexibility

The flexibility built into the course accounts for a "no questions asked" policy to be equally applied to all students. This prevents students from needing to discuss personal matters with the faculty while at the same time giving all students equal treatment. Students who experience a medical or family emergency may contact the professor or the dean of students for additional consideration, but "proof" will be required.

Thresholds

Exact floors and half letter grades will be determined at the end of the semester according to the standards of performance below. Approximate thresholds are listed in parentheses for reference but are not a guarantee.

- A - Excellent (~93%)
- B - Good (~85%)
- C - Average (~75%)
- D - Poor (~65%)
- F - Failure

Academic Misconduct

The penalty for academic misconduct is an F in the course. Academic misconduct includes but is not limited to:

- Submitting any code you did not write yourself and did not attribute in your weekly progress report
- Sharing any code with other teams
- Sharing a video feed of your code
- Discussing exams before all grades are posted
- Posting questions on forums like Reddit, StackOverflow, or Chegg.
- The use generative AI tools such as ChatGPT, GitHub Co-Pilot, Code Whisperer, etc. as a means to generate code for your group project. You may use these tools to learn concepts from the course, but not to generate the code.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
  - Academic Integrity
  - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities (CSD), Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

Exam accommodations should be submitted to CSD as soon as possible so that the professor can approve. All CSD exams should be taken at the exact same day/time as the rest of the class. This includes the final exam.

Homework accommodations cannot be provided in this course since the "weekly homework" is a group project effort.

Weekly lecture participation quizzes are short and meant to be completed very quickly (~2 min). The professor will allow CSD students extra time (a total of ~5 - 6 min) during class before closing the online quiz. As such, quiz accommodations should not be necessary.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website)

Help

Technical and Academic Help provides a guide to technical and academic assistance. This course is completely facilitated online using the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE). Additional informal formative surveys may also be administered within the course as an optional evaluation tool.

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is linked in Discord.