

Course and Instructors Information

Course Title: Data Structures and Object-Oriented Design

Credits: 3

Prerequisites: CSE 1010 or 1729

Instructors :

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Class times: Tuesday and Thursday.

TAs, Office Hours and Availability: TBD by second week of class.

We will do our best to respond to Discord posts within 24 hours and emails within 48 hours Monday – Friday.

This course was created with the aim of acknowledging and embracing the unique thinking and learning styles of neurodiverse students. We strongly believe in fostering an inclusive and empowering learning environment that focuses on individual strengths. Throughout the course, we will introduce various innovative teaching methods, such as collaborative learning with fellow students, stimulating activities such as coding challenges and worksheets, and different assessments like exams, coding assessments, Quizzes, labs, and homework assignments. These methodologies are geared towards not only enriching your comprehension but also fostering active engagement and offering effective problem-solving opportunities. In addition to traditional in-person lectures, we provide supplementary resources like recorded videos and module-specific slides to accommodate various learning styles. We strongly encourage collaboration with other students, promoting group discussions on homework assignments, and fostering a supportive learning environment.

Course Description

Data Structures and Object-Oriented Design is a foundational course that delves into the world of data structures and algorithms. In this course, students will embark on a journey to understand the core principles and best practices for designing efficient data structures, while also exploring the fundamental concepts of object-oriented programming (OOP).

Course Objectives

1. Write programs in python using imports, functions, and object-oriented programming.
2. Compare data structures and algorithms based on time and space complexity and choose the correct ones for a given problem.
3. Implement abstract data types (stacks, queues, dequeues, mappings, priority queues, trees, graphs) using various data structures (lists, linked lists, doubly linked lists, heaps) and algorithms.
4. Use recursive algorithms to solve problems.

Schedule

Dates	Module	Book
8/26 - 8/30	Mod 1 - Python Fundamentals	Ch. 1-4
9/2 - 9/6	Mod 2 - Object-Oriented Programming	Ch. 3-4
9/9 - 9/13	Mod 3 - Testing and Running Time Analysis	Ch. 5
9/16 - 9/20	Mod 4 - Linear Data Structures	Ch. 6-8
9/23 - 9/27	Exam 1 (Conceptual during Lab, Coding during Friday lecture)	
9/30 - 10/4	Mod 5 - Recursion	Ch. 9-10
10/7 - 10/11	Mod 6 - Binary Search and Quadratic time sorting	Ch. 11-12
10/14 - 10/18	Mod 7 - Divide-and-Conquer sorting algorithm	Ch. 13-14
10/21 - 10/25	Exam 2 (Conceptual during Lab, Coding during Friday lecture)	
10/28 - 11/1	Mod 8 - Mappings and Hashing	Ch. 15
11/4 - 11/8	Mod 9 - Trees	Ch. 16-18
11/11 - 11/15	Mod 10 - Priority Queues and Heaps	Ch. 19
11/18 - 11/22	Mod 11 - Unweighted Graphs 1	Ch. 20-21
11/25 - 11/29	Thanksgiving Break.	
12/2 - 12/6	Mod 12 - Unweighted Graphs 2	Ch. 20-21
12/9 - 12/13	Exam 3 (Conceptual and coding during exams week)	

Each module has a lab and a homework. Labs are due at 11:59 PM EST Friday (e.g. Lab 1 is due on 8/30). Homework is typically due at 11:59 PM EST Tuesday (e.g. the Module 1 homework assignment is due on 9/3).

Materials, Platforms, and Software

- **Textbook:** [A First Course on Data Structures in Python](#). (open source pdf)

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- Computer and internet connection
 - [HuskyCT](#)
 - Gradescope (accessed through HuskyCT)
 - [Discord](#) (See HuskyCT for server invite)
 - [Python 3](#)

Grades

The grading breakdown for the course is as follows:

Course Components	Weight
Formative	
Lecture Participation	5%
Lab Participation	5%
Labs	15%
Homework Assignments	15%
Summative	
Exam 1 - Programming	10%
Exam 1 - Conceptual	10%
Exam 2 - Programming	10%
Exam 2 - Conceptual	10%
Exam 3	20%

Detailed descriptions of each course component are below.

Participation

We want you to actively participate in labs and lectures for 2 main reasons:

1. Effective communication and the ability to work with others are part of the Computer Science program objectives ([full list here](#)). These are great opportunities to build those skills.
2. The single greatest predictor of student performance is class attendance. From a [meta-analysis](#) of 52 published articles and 16 unpublished dissertations:
“These relationships make class attendance a better predictor of college grades than any other known predictor of academic performance, including scores on standardized admissions tests such as the SAT, high school GPA, study habits, and study skills.”

Lecture Participation (5%)

- You can earn 1 participation point per lecture, totaling 35 possible points throughout the semester.
- Full credit for participation is awarded at 27 points.
- That means you can miss about 25% of lectures, no questions asked.

While we encourage actively participating in as many lectures as possible, there is no extra credit for going above and beyond 27/36 points in each set. We want to avoid any pressure to attend when you are mentally or physically unwell, and feel extra credit here might lead towards decisions that are unhealthy for you and your classmates.

Lectures will not be live-streamed, but we will do our best to post recordings.

Lab Participation (5%)

We have a total of 11 labs:

- You can earn 4 points for each lab you attend, totaling 44 possible points throughout the semester.
- Full credit for participation is awarded at 32 points.
- You must participate throughout the entire lab period to earn credit. Some activity that may result in reduced or zero lab participation credit, at your TAs discretion:
 - Arriving late
 - Leaving early without showing your TA the completed lab
 - Working by yourself instead of with your partner
 - Arriving with the lab already complete (this circumvents the "working together" portion of labs, which is a critical component of learning.)

As with lectures, there is no extra credit for surpassing the lab participation thresholds.

Labs (15%)

Weekly collaborative assignments and quizzes. During lab time, you'll work in pairs on the coding assignments, but each partner must submit their work individually. The labs are designed to be completed within 75 minutes, but you'll have a few extra days to troubleshoot and submit if needed. Additionally, quizzes will be available on HuskyCT and are due at the same time as the coding assignments.

The quizzes are designed to enhance your understanding of the material and prepare you for the conceptual exams. You will have a total of 5 attempts for each quiz.

lab assignments and quizzes are due on Friday, but you can submit them by Sunday without any penalties.

We will drop the lowest lab and quiz grade from the final calculation.

Homework (15%)

Homework assignments consist of problems tailored to help you evaluate your understanding of each module. Homework assignments may use any mix of manual and automated grading; exact weights will be tailored to each problem set. The standard rubric we will use for manually grading coding assignments can be found [here](#).

Homework assignments are due on Tuesday, but you have a 24-hour grace period for submission.

Homework Collaboration

You can collaborate with up to 3 classmates on each homework assignment, for a total of at most 4 students in each such group. You must note any such collaborators in your submission (a comment at the top of the main script in that homework is fine). Discussion is encouraged, but you must fully complete each assignment independently - any code you submit must be written solely by you, and sharing any code (by sharing files, screen-sharing a text editor with the file open, or telling someone what to write line-by-line) is forbidden.

You may also discuss homework problems within the appropriate channels on our Discord server. As above, keep these discussions conceptual - do not post actual homework code. Small snippets of related problems to help convey your point are fine.

Using Code from the Internet

The textbook and external sites like GeeksForGeeks are excellent resources, but copying large chunks of code from them undermines our assessment abilities. We therefore do not allow copy-pasting or importing code in any assignments in this course unless otherwise specified - you should write all code you submit yourself.

Should you find a function online that you think is appropriate to solve a problem, follow the following protocol to ensure that the work you submit is your own:

- Copy/paste the code locally. Run it, experiment with it, extend it.

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- Delete your local copy.
 - Go do something else for at least 2 hours.
 - Come back and write the code from scratch without referencing the source.

This will ensure you really understand any code you are submitting to the point of mastery - the ability to write such code from scratch.

Similarly, do not use code written by AI tools such as ChatGPT. If using these tools helps you understand concepts, that's fine, but any code you submit must be synthesized and written by you.

Do not post new questions on forums (e.g. Chegg, StackOverflow, Reddit, other Discord servers). Referencing old questions is fine, but remember you have to write all your code from scratch.

Exams (60%)

While most of your labs will be formative (designed to help you learn), we will have 5 summative (designed to measure mastery) conceptual and programming assessments:

- Exam 1 - Programming (Mods 1-4) - 10%: paper-based exam, during lecture.
- Exam 1 - Conceptual (Mods 1-4) - 10%: Multiple choice on HuskyCT, during lab.
- Exam 2 - Programming (Mods 5-7) - 10%: paper-based exam, during lecture.
- Exam 2 - Conceptual (Mods 5-7) - 10%: Multiple choice on HuskyCT, during lab.
- Exam 3 - Conceptual and Programming (Mods 8-12) - 10%: paper-based exam, during final exams week.

During Exam 1 and 2 - Conceptual assessments, you are required to use your personal computer. No extra resources or devices such as cell phones or tablets are permitted during the exam. Additionally, refrain from using online resources, including internet searches or assistance from platforms like ChatGPT. **The penalty for academic misconduct is an F in the course.**

If you cannot take an exam, contact your professor as soon as possible. The earlier you contact us, the more likely we can provide a better alternative than a 0.

Late Work Policy

We cover a lot of material in this course, and it tends to build on itself. This means it's easy for things to snowball out of control - you start submitting assignments a few days late, then need another day the next week, and so on until there's no realistic way to finish the course successfully.

Additionally, this course is too large for us to handle late work requests on a case-by-case basis with the appropriate compassion and nuance. Request-based late policies are subject to implicit bias of the instructor (see e.g. [Chin et. al 2020](#)) and may be underutilized by those who feel they will be judged for making such requests (see e.g. [Whillans et. al 2021](#)).

So, we cannot give unlimited flexibility on assignments (too many students end the semester unable to finish everything they've pushed off), but we want to provide flexibility that is open to anyone without being subject to real or perceived bias or judgement from your professor. Based on these principles, we have developed the following no-questions asked late policies:

1. We will drop the lowest lab and homework.
2. You can submit any lab up to 48 hours late (labs are due Friday, so this gives you until Sunday), no questions asked.
3. You can submit homework assignments up to 24 hours late (homework assignments are due Tuesday, so this gives you until Wednesday), no questions asked.

We encourage you to reach out to your professor early if you start falling behind. We can help you identify core issues and find more successful study techniques. Reach out early - we're here to help, and the earlier you reach out, the more help we can provide. Some worrying trends that indicate you may be falling behind (**speak to your instructor ASAP if you find and of these happening**):

1. You are regularly unable to finish lab on lab day. These problems are designed to be finished within 75 minutes - if it regularly takes you longer, then you may not be adequately prepared for lab. We can help you find more effective methods of preparation.
2. You are regularly starting homework assignments the day or day before they are due, or you are submitting every assignment late. This is a sign that things are about to (or already) snowballing.
3. You are completely lost during lecture. This is likely a sign that you have not mastered the previous concepts (and are beginning to fall behind) or are not adequately preparing before lecture (and are about to start falling behind).

In the event of a major life event that warrants additional extensions (it happens), contact [the dean of students](#). They will provide you with additional resources, including contacting your instructors for additional extensions.

Thresholds

We will determine exact floors and half letter grades at the end of the semester according to the standards of performance below. Instructors reserve the right to modify the floors up or down to match the appropriate level of mastery.

Level of Mastery	Approximate Grade	Letter Grade	GPA
Excellent	93-100	A	4.0
	90-92	A-	3.7
Very Good	87-89	B+	3.3
	83-86	B	3.0
Good	80-82	B-	2.7
	77-79	C+	2.3
	73-76	C	2.0
Average	70-72	C-	1.7
Fair	67-69	D+	1.3
Poor	63-66	D	1.0
	60-62	D-	0.7
Merely Passing	<60	F	>0.0
Failure			

Success and Well-Being

Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. **Your teaching assistants and I strongly encourage you to reframe challenges as an unavoidable pathway to success.**

Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming.

In addition to your academic advisor, I strongly encourage you to reach out to the support services at UConn that are eager to help you with your physical, mental, and academic well-being.

Resource links: [Dean of Students Office](#) and [Student Health and Wellness – Mental Health](#) .

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement. Students who feel they may benefit from speaking with a mental health professional can find support and resources through [the Student Health and Wellness-Mental Health \(SHaW-MH\) office](#). Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor, or contact the office at (860) 486-4705, or <https://studenthealth.uconn.edu/> for services or questions.

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, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.

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](#)).

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' responsibilities with respect to academic and scholarly integrity are described in the following documents: [Responsibility of Community Life: The Student Code](#).

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
- Sharing any code with classmates
- Sharing a video feed of your code
- Discussing exams before all grades are posted
- Posting questions on forums like Reddit, Stack- Overflow, or Chegg
- Using AI-tools like ChatGPT to write code for an assignment

Please check the [Academic, Scholarly, and Professional Integrity and Misconduct \(ASPIM\), Policy on](#) for more information.

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 [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.