Data Structures & Algorithms
COP 3530 Section 092H, 23HC, 23HE, 23HF, 4G22, 1087, 1085, 13A8, 1ZED
Academic Term: Fall 2022

Class Periods:

Lecture	T | P7 (1:55 pm - 2:45 pm)	Live @ CAR-100 & Synchronous via Zoom
	R | P7 - P8 (1:55 pm - 3:50 pm)	

Discussion	T | P9 (4:05pm - 4:55pm)	Section: 1085 | Location: NRN 1037
	W | P2 (8:30am - 9:20am)	Section: 4G22 | Location: CSE E220
	T | P9 (4:05pm - 4:55pm)	Section: 1087 | Location: CSE E220
	W | P4 (10:40am - 11:30am)	Section: 13A8 | Location: ROL 0205
	W | P4 (10:40am - 11:30am)	Section: 092H | Location: NRN 1037
	W | P5 (11:45am - 12:35pm)	Section: 23HC | Location: CSE E221
	W | P6 (12:50pm - 1:40pm)	Section: 23HE | Location: FAC 0127
	W | P7 (1:55pm - 2:45pm)	Section: 23HF | Location: CAR 0100
	W | P7 (1:55pm - 2:45pm)	Section: 1ZED | Location: ARCH 0423

Location: CAR-100 for lectures, discussion locations as above.

Instructor

Amanpreet Kapoor
kapooramanpreet@ufl.edu
Office Hours: TBD
By Appointment (Request 24 hours in advance)

Teaching Assistants/Peer Mentors

Robin Fintz	robinfintz@ufl.edu	Andrew Penton	apenton@ufl.edu
Nitin Ramadoss	nitinramadoss@ufl.edu	Emily Lu	emily.lu@ufl.edu
Julia Harbord	julia.harbord@ufl.edu	Benjamin Cortese	benjamincortese@ufl.edu
Mikhail Budko	mbudko@ufl.edu	Leon Kwan	kwanleon@ufl.edu
Blake Sanders	blake.sanders@ufl.edu	Eugene Li	lieugene@ufl.edu
Richard Bailey	r.bailey@ufl.edu	Eric Iamarino	eric.iamarino@ufl.edu
Tianwei Xie	xietianwei@ufl.edu	Olivia Sakellarides	osakellarides@ufl.edu
Mateusz Plaza	mateuszplaza@ufl.edu	Dustin Chase Karp	dkarp@ufl.edu
Sunny Yu	sunnyyu@ufl.edu	Sara Osmanovic	s.osmanovic@ufl.edu

Course Description

This course covers algorithm development using pseudo languages, basic program structures, program design techniques, storage, and manipulation of basic data structures like arrays, stacks, queues, sorting and searching and string processing. Linked linear lists. Trees and multilinked structures. 3 Credit Hours.

Course Pre-Requisites / Co-Requisites

(COP 3504 or COP 3503) and COT 3100 and (MAC 2234 or MAC 2312 or MAC 2512 or MAC 3473), all with a minimum grade of C.

Course Objectives

By the end of the semester, students should be able to

- Choose and implement data structures for solving problems based on their functions and situational appropriateness of the application
- Choose an algorithm for solving a problem based on its computational complexity and appropriateness of the application
- Use an abstract data type to describe a data structure

Professional Component (ABET)
This course is used to assess program outcomes for these ABET criteria:
- 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
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Required Textbooks and Software
- Required Tools: Canvas, Slack, Edugator, Gradescope, and Lockdown browser
- Optional Tools for practicing additional programming problems: Stepik

Recommended Materials (Optional)
- Textbook: Data Structures and Algorithm Analysis in C++
  - Mark Allen Weiss, Fourth edition, 2014, ISBN 9780132847377
- OpenDSA Book: https://opendsa-server.cs.vt.edu/ODSA/Books/Everything/html/index.html

Course Schedule (Tentative)

Week	Dates		Topic	Deadlines
1	24-Aug	28-Aug	Course Introduction	
2	29-Aug	4-Sep	Algorithm Analysis	Q_1
3	5-Sep	11-Sep	List, Stacks, & Queues	Q_2
4	12-Sep	18-Sep	Trees & Traversals	Q_3
5	19-Sep	25-Sep	Balanced Trees 1	Q_4
6	26-Sep	2-Oct	Balanced Trees 2	Q_{5a}
7	3-Oct	9-Oct	Heaps & Priority Queues	Q_{5b}, P_1
8	10-Oct	16-Oct	Exam 1 – October 13	Q_6, E_1
9	17-Oct	23-Oct	Sorting	
10	24-Oct	30-Oct	Sets, Maps, & Hashing	Q_7
11	31-Oct	6-Nov	Graphs 1	P_{3a}
12	7-Nov	13-Nov	Graphs 2	Q_8, P_2
13	14-Nov	20-Nov	Greedy Algorithms	Q_9
14	21-Nov	27-Nov	Dynamic Programming	Q_{10}
15	28-Nov	4-Dec	Exam 2 – December 1	Q_{11}, E_2
16	5-Dec	7-Dec	Complexity Theory	P_{3b}
Legend: Q_N = Quiz N, P_N = Project N, E_N = Exam N				

Evaluation of Grades

Modality	Assignment	% of Final Grade
Individual	Programming / HTG Quizzes (drop two lowest scores)	12%
	Conceptual quizzes (drop two lowest scores)	10%
	In-class/discussion activities (drop four lowest scores)	4%
	Exam 1	20%
	Exam 2 (Cumulative)	22%
	Project 1	12%
	Project 2	10%
Collaborative	Final Project (Individual or Group: 3a & 3b)	10%
Individual	Extra Credit Opportunities & Bug Bounty Program	Up to 2%
		Total: 102%

Grading Policy

Percent	Grade	Grade Points		Percent	Grade	Grade Points
93.4 - 103	A	4.00		73.4 - 76.6	C	2.00
90.0 - 93.3	A-	3.67		70.0 - 73.3	C-	1.67
86.7 - 89.9	B+	3.33		66.7 - 69.9	D+	1.33
83.4 - 86.6	B	3.00		63.4 - 66.6	D	1.00
80.0 - 83.3	B-	2.67		60.0 - 63.3	D-	0.67
76.7 - 79.9	C+	2.33		0 - 59.9	E	0.00

More information on UF grading policy: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Attendance Policy

1. Lectures will be offered in-person and through Zoom. However, we highly recommend that you attend in person.
2. There will be randomly scheduled participation activities in lectures and discussions that weigh 4% of your final grade. Hence, it is recommended you **attend lectures and discussions**.

Make-Up, Project Resubmission, and Late Submission Policy

3. **No make-up or late submission** allowed on **in-class/discussion activities and quizzes**. Remember, you have drops. We will not be offering alternative assessments or extensions on these activities.
4. Projects submitted late will be penalized by **10% each day up to four days**. After the fourth day, you will get a 0. We also count weekends as regular days. So, if an assignment is due Friday, and you submit on Sunday, you will be graded out of 80 instead of 100 (2 days late penalty).
5. No late submission allowed on Final Project (3a and 3b).
6. Projects 1 and 2 will have a hidden test suite which we will use for grading after your submission. If you score lower than 100 points on Project 1 or 2, you will have an opportunity to resubmit and get 50% credit back for each additional test case you pass in the suite. We will see the differences in your two submissions to make sure you aren't submitting an entirely new version of the code. *You are not eligible for resubmission if you do not pass at least three public test cases in the first attempt.*
7. Exams may be made up when a student has an excused absence. These absences must be notified to the instructor at least 72 hours before the exam. Excused absences must be consistent with university policies in the catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation. Please note that there is no guarantee that requests will be accommodated.
8. A common cumulative **make-up exam** will be held during the Final Exam time and location as set by the Registrar. If you miss exam 1 or exam 2, you will be taking this exam. If you miss both, then you will not receive credit for one of the exams. Note that you can only take a make-up exam if you had prior approval from the instructor.

Grade Review

9. After one week of posting a grade, no revisions will be made. In the event of a grade review, the entire assignment will be reviewed, and your score can also decrease.
10. If there is an ambiguity on a quiz or exam question, you need to get back to the instructor within two hours of taking the quiz/exam to potentially get back points in case the ambiguity is genuine.
11. We do not negotiate auto-graded components on assessments unless there is a typo such as a comma or a space. Please do not contact us for partial credit on auto-graded questions. Missing values is not considered as a typo. You get partial credit if you select one of the correct answers for auto-graded questions. You get negative partial credit if you select the wrong answer. This is deliberate. Otherwise, you will select every option and get full credit if there was no negative penalty.

Class Expectations

12. Programming Quizzes will require Edugator and Gradescope; Conceptual quizzes will be on Honorlock.
13. Exams will be in-person and will use Lockdown browser and Canvas.
14. For the exams, you can use C++ or pseudo code to describe your solution to a given problem.

15. C++ is the programming language that will be used throughout the course. You will be coding using C++ 14 in all quizzes and Projects 1 and 2. For the final project, you can use any language or multiple languages.
16. Strive for correctness, clean, readable, tested, and documented code throughout the course and not for optimization. Correctness and readability are the goals for this course. Once you have the correct solution then optimize if you want.
17. The course will not include Design patterns, Competitive programming, or Formal proofs. The instructor or the course staff will answer questions on the former topics contingent on their time or point you to additional resources. Feel free to post such questions on Slack channels. If any of your classmates do post such questions, don't feel intimidated and if you don't understand it, it is perfectly natural and fine. Some students are more experienced, and everyone should strive to improve their learning not comparing to others.

Academic Dishonesty

18. **Quizzes and Exams:**
    - You are **required** to work on programming questions assigned in a quiz on Edugator, conceptual quizzes, and exams **independently** without asking or searching for solutions on the web.
    - You **must not be discussing** the solutions to these assessments **even at the conceptual level**.
    - You are **allowed** to
        - discuss solutions after the due date and late days have passed.
        - search for C++ syntax or refer to definitions of standard functions in the C++ library. For example, using the documentation listed here is fine:
          https://www.cplusplus.com/reference/ or https://en.cppreference.com/w/
19. **Project 1 and 2**:
    - You are **required** to work on projects **independently** without asking or searching for solutions on the web.
    - You are **allowed** to
        - discuss conceptually small sections in your project without discussing any code with a peer provided you cite the peer with who you discussed it. Such discussions should be held on a whiteboard using explanation figures/pseudo-codes or through talking.
        - discuss solutions after the due date and late days have passed.
        - search for C++ syntax or refer to definitions of standard functions in the C++ library. For example, using the documentation listed here is fine:
          https://www.cplusplus.com/reference/ or https://en.cppreference.com/w/
20. **Project 3**:
    - It is fine to collaborate with peers. You must make sure you are not blindly copy-pasting another student's code. Also, you must cite the peer you worked with at the code level or conceptually.

21. **Code policy for "individual" assessments**
    - Sharing/copying, "borrowing" of code structure, looking at code from another student or providing such code, and plagiarism, in addition to other dishonest behaviors, are all considered to be academic dishonesty. No information regarding the project 1-2, quiz, and exam solutions may be shared by students.
    - **Looking at any piece of your peer's code, sharing files, searching for solutions found online, or using someone else to code your solution is strictly prohibited**.
    - Any student found to have violated these rules, whether a provider or receiver or unauthorized help, will be given a **zero** on that assignment **and** a **two-letter final grade decrement** for a first offense. For a second offense, you will get an E grade. Also, for both offenses, you will be reported to the Honor Court. **If you aren't clear on what constitutes plagiarism, ask the course staff.**

Discussion and Slack Policy - Be Nice, Be Helpful

22. Treat your classmates with civility and respect. Don't attack anyone and no discussion of controversial topics on channels.
23. If you have a question regarding code or content, always post it on the appropriate *Slack* channels if you want the course staff to answer. Do not be hesitant however simple is the question.

24. Use private message or email only if the message is related to personal requests. **Questions related to debugging on private messages will be ignored.**
25. Questions will be answered **Monday – Friday in less than 48 business hours typically** by at least one member of the course staff.
26. Try to answer questions posted by your course mates if possible and help them. This is helpful for a vibrant environment in a remote course.
27. Harassment/Bullying/Making fun of another student will not be tolerated and will lead to disciplinary actions. If someone is behaving disrespectfully on the forum which you find inappropriate, send the instructor a message and don't argue on it publicly.

Office Hours and Code Review Policy
28. Students should visit the course staff during scheduled office hours for help on projects or quizzes. Do not send emails or "@" instructors or TAs about project help. The TAs and instructor will often try to answer questions in Slack channels, but the way to get personalized help is to visit them during office hours.
29. The course staff cannot provide you more than 15 minutes of their time in case of long lines or more than two students waiting to get help during office hours.
30. **Debugging requests** for projects/quiz questions must first go through the TAs, peer mentors, or a post on the **Slack** channel. This is **strongly encouraged** given we have a large class and several of you might have similar questions. If your problem is not fixed, then Slack message the instructor and add the TA/Peer mentor who you asked for help to the conversation. **Debugging requests to the instructor as a direct message or an email will be ignored if you do not follow the above protocol.**
31. When making any **debugging requests**, make sure you provide the context of what problem you are trying to solve and where is your code failing. Small snippets can be posted on Slack but not the entire code.

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media

platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: https://counseling.ufl.edu, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; https://career.ufl.edu.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/;https://care.dso.ufl.edu.

On-Line Students Complaints*: https://distance.ufl.edu/state-authorization-status/#student-complaint*.