

Data Structures and Algorithms

Section 1085/12127, 1087/12128, 13A8/12129, 23HC/12131, 23HE/12132, 23HF/12137

Tu 1:55-2:45

Th 1:55-3:50

Location: Turlington L007

Section 3541/22600

MWF 12:50-1:40

Location: NEB 0202

Academic Term: Fall 2018

Instructor:

Cheryl Resch

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443-223-3562

Office Hours: Monday 3pm-4pm, Wednesday 2pm-3pm, Friday 10am-11am

Office Location: CSE E508

TAs:

Section 23HF/12137 Monday Period 5 CSE E221

Ryan Horoff

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Section 13A8/12129 Monday Period 7 CSE E222

Paul Ritaldato

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Section 1087/12128 Monday Period 9 CSE E119

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Section 23HC/12131 Monday Period 10 CSE E220

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Section 23HE/12132 Monday Period 11 CSE E221

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Hannah Mathew

TA Office Hours (E309 or E312)

	Monday	Tuesday	Wednesday	Thursday	Friday
Period 2				Alex	
Period 3	Spencer		Spencer		Isaiah
Period 4	Joe	Rosa	Paul		Isaiah
Period 5		Thomas		Thomas	
Period 6	Ryan		Hannah		
Period 7		CLASS		CLASS	
Period 8	Hannah		Michael	CLASS	
Period 9		Jose	Michael	Henry	
Period 10	Aman			Henry	

Course Description

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.

4 Credit Hours

Course Pre-Requisites

COP 3504 or COP 3503 with minimum grade of C, COT 3100, and MAC 2234, MAC 2312, MAC 3473 or MAC 3512.

Course Objectives

This course covers implementation and use of data structures for use in problem solving. In particular, lists, stacks, queues, trees, tables and graphs will be covered. Algorithm development

including recursive techniques will be covered. Sorting algorithms will be covered. Students will learn to solve problems using data structures and choose how those data structures will be implemented.

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 application
- Choose an algorithm for solving a problem based on its computational complexity and appropriateness of application
- Use an abstract data type to describe a data structure

Materials and Supply Fees

N/A

Professional Component (ABET):

This course is used to assess program outcomes for these ABET criteria:

a) an ability to apply knowledge of mathematics, science and engineering

e) an ability to identify, formulate, and solve hardware and software computer engineering problems, accounting for the interaction between hardware and software

k) an ability to use the techniques, skills, and modern engineering tools necessary for computer engineering practice

Required Textbooks and Software

- Data Structures and Algorithm Analysis in C++
- Mark Allen Weiss

- 4e, 2014
- 978-0-13-284737-7

The textbook is available in eBook form in Canvas.

Course Schedule

Date	Topic	Readings	Assignment
Aug 22, 23, 24	Intro, Computational Complexity, Algorithm Analysis	Weiss Chapter 2	Quiz 0 - Syllabus
Aug 27-31	Lists, Stacks and Queues	Weiss Chapter 3	Quiz 1 – Computational Complexity
Sept 4-7	Recursion		
Sept 10-14	Trees, Tree Traversals, Binary Search Trees	Weiss 4.1-4.4	Quiz 2 – Lists, Stacks and Queues
Sept 18-21	AVL Trees, B-Trees, Splay Trees, Red Black Trees	Weiss 4.5-4.7, 12.2	Quiz 3 – Recursion Programming Assignment 1 Due Sept 21
Sept 24, 25, 26	Review, Exam		Quiz 4 - Trees
Sept 27, 28, Oct 1	Hashing	Weiss Chapter 5	Oct 1, 2
Oct 2-5	Heaps	Weiss Chapter 6	
Oct 8-12	Sorting	Weiss Chapter 7	Quiz 5 – Heaps
Oct 15-18	Graph Traversals, Graph Implementation, Topological Sort	Weiss 9.1-9.2	Quiz 6 - Sorting
October 22-26	Shortest Paths	Weiss 9.3	Quiz 7 - Graphs

			Assignment - Hashing Analysis Due October 26
October 29-Nov 1	Minimum Spanning Trees,	Weiss 9.5	
Nov 5, 6, 7			Exam 2 - Nov 7, 8
November 8-9	Introduction to NP Completeness	Weiss 9.7	
November 13-16	Greedy Algorithms	Weiss 10.1	Quiz 8 – Graph Algorithms
November 19, 20			Quiz 9 – Greedy Algorithms
November 26-30	Dynamic Programming	Weiss 10.3	Programming Assignment 2 Due November 30 Final Exam
December 3-5	Review		Dec 11 7:30-9:30 am (Tu Th)
			Dec 13 3-5 (MWF)

Attendance Policy, Class Expectations, and Make-Up Policy

Exams are held during an exam period in a location to be announced and require the use of Respondus Lockdown Browser.

Exams may be made up when student has an excused absence.

Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> (Links to an external site.)Links to an external site.) and require appropriate documentation.

Programming Assignments may be turned in late with a penalty of 10% per day up to 4 days late.

Quizzes are given during discussion period and cannot be made up.

Evaluation of Grades

Assignment	Percentage of Final Grade
Programming Assignments (2)	30%
Hashing Analysis	10%
Quizzes (9)	10%
Exams (2)	30%
Final Exam	20%
	100%

Grading Policy

Percent	Grade	Grade Points
93 - 100	A	4.00
90.0 - 92.9	A-	3.67
87 - 89.9	B+	3.33
83 - 87	B	3.00
80.0 - 83	B-	2.67
77 - 79.9	C+	2.33
73 - 76.9	C	2.00
70.0 - 73	C-	1.67
67 - 69.9	D+	1.33
63 - 67	D	1.00
60.0 - 63	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx> (Links to an external site.)Links to an external site.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals> (Links to an external site.)Links to an external site.. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/> (Links to an external site.)Links to an external site..

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://www.dso.ufl.edu/sccr/process/student-conduct-honor-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.

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: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html> (Links to an external site.)Links to an external site.

Campus Resources:

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Health and Wellness

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: <http://www.counseling.ufl.edu/cwc> (Links to an external site.)Links to an external site., and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

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/> (Links to an external site.)Links to an external site..

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Academic Resources

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E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml> (Links to an external site.)Links to an external site..

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/> (Links to an external site.)Links to an external site..

Library Support, <http://cms.uflib.ufl.edu/ask> (Links to an external site.)Links to an external site.. 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/> (Links to an external site.)Links to an external site..

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/> (Links to an external site.)Links to an external site..

Student Complaints Campus:

https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf (Links to an external site.)Links to an external site..

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process> (Links to an external site.)Links to an external site..