

COP 3530 Data Structures and Algorithms

Credits: 4

Course Catalog 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. (MR)

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 lies at the core of computer science and aims to teach you effective ways to represent data and to develop and implement most important computer algorithms in use today. You will learn how the choice of data structures and algorithm design methods impacts the performance of your code. This course will also make you proficient in C++ and solidify your Object Oriented Design concepts.

Instructor: Jeff DePree; Grad Student; jdepree@ufl.edu
Office Hours: Tuesday 9-10AM, Thursday 10-11AM in E309

Teaching Assistants:

Louis Cheung (teaches both discussion sections)
Office Hours: Thursdays and Fridays 4:05-6PM in E309
Qi Zeng (only grading)
Office Hours: Mondays and Wednesdays 1:50-2:50PM in E309

Lectures: MWF 8th Period (3-3:50PM) [Pugh Hall 170](#)

Discussion: M9 (4:05PM) in CSE119 for section 6723
T8 (3PM) in CSE222 for section 1079

Final Exam: Wednesday, April 24th, 3PM (in-class)

Textbook: Data Structures, Algorithms and Applications in C++, 2nd Edition (2004)
Sartaj Sahni. ISBN: 0-929306-32-5. [Free Ebook](#) at UF library.

Tentative Course Outline:

1. Introduction to C++ (9 lectures) More C++ will be interspersed throughout the course and will be covered in lectures, discussion sessions, reading and assignments.
2. Performance Analysis, simple sort methods (1 lectures)
3. Asymptotic Notation (1L)
4. Lists (5 lectures) Expect more C++ to be covered here.
5. Arrays and Matrices (1 L) (You would have covered most of this material in the C++ intro)
6. Stacks and Queues (3L)

7. Hashing (3L)
8. Binary trees (4L)
9. Priority Queues (2L)
10. Search Trees (2L)
11. Graphs (3L)
12. Greedy Algorithms (3L)
13. Divide and Conquer (3L)
14. Dynamic Programming (5L)

Basis for Grading: Projects and Homeworks (4): 55%
Exams (3): 45%

Grading Scale: 90-100 A, 87-89 A-, 84-86 B+, 80-83 B, 77-79 B-, 74-76 C+, 70-73 C
67-69 C-, 64-66 D+, 60-63 D, 57-59 D-, <57 F

A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Honesty Policy: All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.

See <http://www.dso.ufl.edu/sccr/procedures/honorcode.php>

Accommodation for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

Software Use: All faculty, staff and student 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.