









CSCI 230: Data Structures and Algorithms

Spring 2020

Course Information

	Instructor: Dr. Jonathan Z. Sun		Office: Harbor Walk East 313
	Phone: (843) 953-8151		Email: sunjz@cofc.edu
Office Hours: 9:30am-12:30pm Tuesday, 2:30pm-3:30pm Friday, or by appointment			

	TA: Caitlin Cabrera		Office: Harbor Walk East 311
	Phone: (843) 953-8151		Email: cabrerac@g.cofc.edu
Office Hours: 12:00pm-5:00pm Tuesday, or by appointment			

Meeting Time. MWF 1:30-1:20pm (S01) or 1:30-2:20pm (S02).

Meeting Place. Harbor Walk East 302

Webpage. <http://sunjz.people.cofc.edu>

Required Textbook. <https://learn.zybooks.com/>

Subscribe with zyBook Code: [COFCCSCI230SunSpring2020](https://learn.zybooks.com/)

Please use your CofC email and official name to create account. Personal subscription to the text is essential, as completion of the interactive components will contribute to your course grade.

Online Resources.

- Book. <https://opensa-server.cs.vt.edu/ODSA/Books/CS2/html/>
- Video. <https://www.youtube.com/watch?v=RBSGKIAvoiM&t=8623s>
- Coding. <https://leetcode.com/>
- Discussion. csci230s20.slack.com

Course Description

This course reviews and develops the abstract data type as mathematical models. Data structures and algorithms are developed as the objects and operations of abstract data types. Topics include lists, stacks, queues, trees, graphs, searching, sorting, and analysis of the efficiency of algorithms. Lectures three hours per week.

Prerequisite(s): CSCI 221 with a grade of C- or better and MATH 207.

Learning Outcomes

After completing CSCI 230 students will be able to:

1. Analyze algorithms using asymptotic analysis.
2. Distinguish between the notions of an abstract data type and physical data structure.
3. Apply stacks, queues, lists, trees, binary search trees, balanced binary trees, hash tables, heaps and priority queues, and graph ADTs in computer solutions.
4. Implement ADTs and appropriate operations on ADTs.
5. Be able to identify the advantages and disadvantages of the use of specific data structures in specific problem situations.
6. Distinguish between various sorting algorithms in terms of how they work and their efficiency in specific problem situations.
7. Apply written communication skills to produce one or more reports on one to two pages on topics of data structures and algorithms.

Course Work

Zybook Preview Exercises	15%
Homework Assignments (Programming and Analysis)	30%
Three Tests	30%
Final Exam	25%

Final Grade Scale

93 – 100 = A	90 – 92 = A-	
87 – 89 = B+	83 – 86 = B	80 – 82 = B-
77 – 79 = C+	73 – 76 = C	70 – 72 = C-
67 – 69 = D+	63 – 66 = D	60 – 62 = D-
59 or below = F		

- **Zybook Preview with Online Exercises**
 - Preview the sections and complete exercises BEFORE every class meeting. Each class counts for 0.5 point towards the final grade.
 - Completion status for grading is cut off at 11: 00am of the class meeting day.
 - Full credit for 100% completion.
 - Half credit (i.e. 0.25 penalty point) for minor incompleteness.
 - Zero credit (i.e. 0.5 penalty point) for major incompleteness.

- **Homework Assignments**
 - There are around 15 homework assignments. Most problems are for programming, a few are for algorithm analysis.
 - A typical assignment consists of two problems, each counting for 1 point towards the final grade.
 - Full credit for submitting by deadline with 100% correctness and passing all testing cases.
 - Half credit (i.e. 0.5 penalty point) for minor imperfection (e.g. failing a large testing case) or minor delay (typically in hours).
 - Zero credit (i.e. 1.0 penalty point) for major error(s) or severe delay.

- **Tests**
 - Three tests in class. Each counts for 10 points towards the final grade.
 - All tests are on paper and pencil, and all are close-book, close-notes.
 - Your lowest test score can be “remedied” by the 2nd lowest by taking average of the two.
 - For example, if your three test scores are 9, 4, 8, then your total is $9 + \text{average}(4, 8) + 8 = 9 + 6 + 8 = 23$.
 - For another example, if your three test scores are 9, 6, 7, then your total is $9 + \text{average}(6, 7) + 7 = 9 + 6.5 + 7 = 22.5$.

- **Final Exam**
 - Final exam is comprehensive. Questions may come from any section unless being excluded by instructor. There is no study guide.
 - It's on paper and pencil and is close-book.
 - You may use one cheat sheet, i.e., a US Letter page written in front and back.
 - It counts for 25 points towards the final grade.

- **Challenge to Grading**
 - Grading can only be challenged for mis-calculation or mis-copy type of errors.
 - No extra work will be offered to compensate a poor score.
 - Minor curve to the overall class or minor grace to a certain student at the borderline of two letter grades is possible. However it cannot be asked for. It's the instructor's sole decision without any obligation.

C of C Policies

Disabilities

Any student who feels he or she may need an accommodation based on the impact of a disability should contact me individually to discuss your specific needs. Also, please contact the College of Charleston, Center for disability Services <http://www.cofc.edu/~cds/> for additional help.

Student Honor Code

I expect you to abide by the Honor Code and the Student Handbook: A Guide to Civil and Honorable Conduct. If you have a question about how to interpret the Honor Code, ask before acting! I encourage collaboration, but you must document it. Thus, each student will submit their own homework and, when collaborating, provide a reference to those people and documents consulted.

Attendance

ATTENDANCE IS SUPER STRONGLY ENCOURAGED. Attendance at regular classes is not mandatory, but is a great way to engage the course material and to ask questions. Attendance for tests and the exam is expected (rescheduling for sickness is accommodated). Please do not attend class if you are sick or believe you are becoming ill. It is best to document your absence through an absence report in Undergraduate Academic Services.

Electronic Devices

The use of electronic devices, both stand-alone and network capable, will play an increasingly important roll in teaching and learning at the College of Charleston, including their use in our classrooms. Just be respectful about unnecessary distractions to you and to others seated around you.

How to report an absence

Students should come to 67 George Street (white house next to Stern Center) to discuss absences and fill out the appropriate forms. Or get forms online at: http://www.cofc.edu/studentaffairs/general_info/absence Forms can be faxed to the College at 953-2290.

Students will need documentation for health, personal or emergency situations. Athletic Teams and school-sponsored trips will have documented lists of students participating on our letterhead as early in the semester as we get the information from the organization. We would like all information on scheduled outings to reach us at least two full weeks in advance. We will then turn the information back to the coach or advisor.

Academic Integrity

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the

student may petition for the X to be expunged. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration—working together without permission— is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>