
csce350 — *Data Structures and Algorithms*
Fall 2019 — *Syllabus*

1 *Course Personnel*

Instructor: Jason O’Kane (jokane@cse.sc.edu)

Teaching assistant: Shervin Ghasemlou (sherving@email.sc.edu)

2 *Webpage*

Information about the course, including scheduling information, assignments, and announcements, will be posted at this site:

<https://cse.sc.edu/~jokane/teaching/350>

3 *Lectures*

Tuesdays and Thursdays, 10:05–11:20am, SWGN 2A14

4 *Office Hours*

When?	Where?	Who?
Mondays, 2:00–4:00	Innova 1205	Ghasemlou
Tuesdays, 3:00–4:30	Innova 2229	O’Kane
Wednesdays, 2:00–4:00	Innova 1205	Ghasemlou
Thursdays, 3:00–4:30	Innova 2229	O’Kane

You may also stop by my office at other times —I am often, but not always, around and available to help— or make an appointment using the site linked from the course webpage.

5 *Description*

Official description Techniques for representing and processing information, including the use of lists, trees, and graphs; analysis of algorithms; sorting, searching, and hashing techniques.

Course outcomes Algorithms and data structures form the backbone of computing. This course covers techniques for designing and analyzing algorithms for a variety of problems. After taking this course, you should be able to:

- Describe formal analysis measures.
- Describe the relevance of abstraction to problem solving.
- Analyze and use lists, trees, and graphs.
- Apply common algorithm design techniques such as brute force, divide-and-conquer, decrease-and-conquer, transform-and-conquer, dynamic programming, and the greedy technique.

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- Analyze algorithms.
 - Use appropriate data structures.

Relationship to other courses This course is different from many other computing courses, especially those at the lower level, because the primary content of the course is not focused on any specific programming language. (The programming assignments will use C++, but only because of the need for uniformity, rather than because of any specific features of that language.) Instead, we will study algorithms that are useful across all programming languages. As a result, the things you will learn in this course should still be useful in, say, twenty years, when your favorite programming language is only a faded memory.

6 Prerequisites

By course CSCE 240 (Advanced Programming Techniques); MATH 174 or 374 (Discrete Structures)

By topic Introductory programming and data structures; Discrete mathematics; Use of simple data structures (queues, stacks, lists, trees)

7 Textbook

The required textbook is:

Anany V. Levitin, *Introduction to the Design and Analysis of Algorithms*, Third Edition, Addison Wesley, Boston, MA, 2011. ISBN 978-0132316811.

We will follow this book fairly closely, and homework problems will be assigned from it. However, the tests will be closed book.

8 Evaluation and Grading

Your learning in this course will be evaluated based on the following factors:

- An online **start-up quiz** available at the course website. The quiz is due at 11:59pm on **August 27**. This quiz is worth **10 points**.
- **Homework** assignments will be given frequently. These assignments will be due at the start of the following class period. Homework grading will be based on a significant good faith attempt to solve the assignment problems correctly. In lieu of submitting solutions on paper, you should use the form linked from the course website to confirm that you have completed each assignment. Late submissions cannot be accepted. The purpose of these assignments is to give you a chance to practice the material covered in class, and to give an indication of the level of understanding that will be expected for the tests. The homework assignments will be worth **70 total points**.
- Four **programming projects** will be given through the semester. The purpose of these projects is to illustrate how to translate from the abstract algorithms we'll discuss in the

class into working software. The projects must be done in C++ and will be graded using the department's Linux platform. To expedite grading, each assignment will have very specific submission instructions, including precise formats for input and output. You will be expected to follow these instructions carefully. Submissions that do not conform to the instructions cannot earn full credit. The first project, worth **10 points**, will be a very simple exercise to ensure that you understand the mechanics of how to complete the projects in the course. The remaining three projects will be worth **70 points** each.

- **In-class tests** will be given on ~~September 24~~ September 26 and November 5. These will be closed-book exams with no electronic devices allowed. Each test will be worth **100 points**.
- A **final exam**, at 9am on December 10. The final will cover material from the entire course, with a focus on material introduced after the second in-class test. The final is worth **200 points**.

Thus, there are a total of **700 points** available to earn through the semester. The following table shows how final grades will be determined.

Grade	Range
A	630–700
B+	595–629
B	560–594
C+	525–559
C	490–524
D+	455–489
D	420–454
F	0–419

Gradebook access Grades will be posted on the CSE moodle server:

<https://dropbox.cse.sc.edu>

It is your responsibility to verify that grades are correctly recorded on this site.

Corrections and regrades My goal is to ensure that all of the grading for this course is fair and correct. If you believe there's been a mistake in grading, please bring it to the instructor's attention in office hours within one week after the scores are posted. Regrade requests after one week will be politely declined.

Important reminder Keep in mind that I am grading your work, not you as a person.

Deviations from the grading policy I assume that every student takes the class intending to succeed, and I share that goal. However, requests for grade increases that are inconsistent with the stated grading scale will be politely declined. Here is an incomplete list of hypothetical requests from students that are **not sufficient** for me to deviate from the stated grading scale:

- *I need a GPA of at least ___ to get the internship I want.*

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- *If my grade is less than ____, my parents will be disappointed in me.*
 - *If my grade is less than ____, I won't be able to graduate.*
 - *I've never gotten a grade as low as ____ before.*
 - *I have too many other responsibilities.*
 - *The course is too hard.*

9 Policies

Attendance The instructor will not keep detailed records of class attendance. However, your instructor will make every effort to ensure that class attendance is worth your time. Missed tests due to unexcused absences will result in a score of zero. In the instructor's experience, lack of class attendance has correlated strongly with poor grades.

Cheating Academic dishonesty undermines the educational mission of the course and reflects disrespect to your classmates and to your instructor. Therefore, you are expected to practice the highest possible standards of academic integrity. The academic penalty for cheating is a failing grade for the course. This policy includes all forms of academic misrepresentation. Details on university's academic integrity policies are available at

<http://sc.edu/academicintegrity>

Collaboration Assignments should be done independently. It is permissible to discuss the problems at a high level with your classmates, but you should work out the details and compose the complete answers independently. Submission of identical or substantially identical work will be considered strong evidence that cheating has occurred.

Late assignments Homework assignments cannot be accepted late, because we'll discuss the solutions on the due date. Programming assignments submitted late will be assessed a penalty of 15% of the maximum score for each day or fraction of a day. Example: An assignment that would normally be scored 95/100, but submitted 2.5 days after the deadline, would earn $95 - [2.5] \cdot 15 = 95 - 45 = 50$ points.

Mobile devices Please silence any mobile devices before coming to class. If your phone rings in class, I reserve the right to answer it for you and take a message. Likewise, if my phone rings during class time, I will allow a student to answer it.

Accommodations for disabilities Any student with a documented disability should contact the Student Disability Resource Center to make arrangements for appropriate accommodations.

Policy changes Changes to the syllabus at the instructor's reasonable discretion, including changes to course schedule or to the evaluation and grading mechanisms, are possible but unlikely.