

**CS 311: Algorithms and Data Structures**  
**Fall 2025     4 credits**  
**Hybrid Format: Recorded lecture, Lab Wednesday 3:00-5:45 in MLH 310**

## Instructor Information

Name: S. Seth Long, Ph.D  
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Office Hours: Monday 1:30-3:00, Thursday 10:30-12:00  
Course Website: <http://isoptera.lcsc.edu/~seth/cs311>

## Pre-requisite

CS211 with a C or better

## Course Description

Covers the fundamentals of data structures, abstract data types and associated algorithms. Topics include: abstract data types, recursion, trees, graphs, hashing, and searching and sorting. Pre-requisite: CS-211 with a grade of C or better.

## Course Goals

- Understand dynamic data structures such as linked lists, trees, hash tables, and heaps
- Become more familiar with object-oriented programming in C++

## Textbook

*C++ Early Objects*, Tony Gaddis, Judy Walters, and Godfrey Muganda, 9th edition

## Communication Policy

Email is the best way to reach me, and I try to respond within 24 hours during the work week (Monday through Friday). Often I respond on weekends as well, but less consistently.

## Grading

Your grade will be calculated based on the following items:

Item	Percentage of grade
Midterm 1	15%
Midterm 2	20%
Final	30%
4 Projects	20% total (5% each)
Lab Assignments	15% total

Attendance will not be taken in this class except as required for financial aid purposes. However, all material presented during lecture is “fair game” for the midterm and final, and some of this material may not be in the book as well. Therefore I recommend that you always attend class.

I strive to return feedback on assignments within a week, however, other priorities such as providing content for class and answering student questions may override this goal.

Grades will be assigned according to a standard curve, that is:

- A: 90% +
- B: 80%- 90%
- C: 70%- 80%
- D: 60%- 70%
- F: less than 60%

Use of + or - grades (such as B+ or A-) and curves will be at the instructor’s discretion.

## Course Assignments

Lab assignments will typically be made available prior to the week they are listed in, and due on Monday of the week after. Refer to the course calendar for timing. Not all weeks have a lab assignment. In addition, projects will have a longer timeframe, usually at least two weeks. There may be lab assignments even while projects are ongoing.

## Deadlines and late work

Late work will not be accepted except by instructor discretion. However, partial credit will be given for partially-completed work. It is better to turn in an unfinished assignment for partial credit than to not turn in something on time and receive a 0.

## Academic Dishonesty

Cheating on any assignment will result in failing the class. Some things which constitute cheating in this class are:

- Copying another student's homework
- Turning in homework created by another student
- Reading another student's answers on a test
- Sharing all or part of your completed homework with another student before the assignment is due

Appropriate collaboration on homework involves sharing ideas with other students only, not source code! Although it is often tempting to help another student by showing them how your completed program works, this is not helpful to their learning. However, this does not mean you cannot collaborate with other students on homework. Sharing of ideas, principles, and algorithms is permitted and encouraged.

## Tentative Course Calendar

Fall 2025 CS311 Tentative Schedule	
Week Of	Course Content
Aug 18	C++ Review and Pointers
Aug 25	C++ Objects and Template Classes
Sep 1	Linked Lists
Sep 8	Stacks and Queues
Sep 15	Midterm 1
Sep 22	Finding Memory Errors
Sep 29	Sorting, for Linked Lists and Arrays
Oct 6	Binary Trees (unbalanced)
Oct 13	Red/Black Trees
Oct 20	Midterm 2
Oct 27	Heaps
Nov 3	More on Heaps or Catch Up
Nov 10	Hash Tables
Nov 17	Remaining data structures topics (probably algorithm analysis)
Nov 24	Thanksgiving Break
Dec 1	Finishing Projects
Dec 8	Final Exam Wednesday, December 10 at 3:00 in MLH 310

## College Statement on State Law, Academic Freedom, and Course Expectations

Effective July 1, 2025, Idaho Code § 67-5909D establishes that courses “derived from or that promote” certain concepts associated with critical theory or diversity, equity, and inclusion (DEI) may be subject to additional state-level reporting and oversight. However, the statute also explicitly affirms that it does not “limit the free discussion of ideas in a classroom setting.” At LC State, this provision protects our ability to foster a learning environment grounded in open inquiry, respectful dialogue, and academic integrity.

As one of Idaho’s four public four-year institutions, LC State is governed by policies of the Idaho State Board of Education, including the following principles articulated in SBOE Policy III.B:

*“Membership in the academic community imposes on administrators, faculty members, other institutional employees, and students an obligation to respect the dignity of others, to acknowledge the right of others to express differing opinions, and to foster and defend intellectual honesty, freedom of inquiry and instruction, and free expression on and off the campus of an institution.”*

In line with these principles, this course is designed to encourage your academic development through thoughtfully selected readings, activities, and assignments. You are invited to engage critically with course materials, analyze competing viewpoints, and arrive at your own reasoned conclusions. While some content may challenge your perspective, you will not be asked or required to adopt any specific ideological or political position.

As you review the course syllabus and other instructional materials, please know they have been developed to support a respectful, engaging, and rigorous learning community. If at any point you decide that this course does not align with your academic preferences or goals, you are encouraged to contact your Academic Advisor (full email: [advisor@lcsc.edu](mailto:advisor@lcsc.edu)) to discuss available alternatives. Be sure to consult the LC State Academic Calendar for important deadlines related to course withdrawal or schedule changes. If you are receiving scholarships or financial aid, consult with the Financial Aid Office about potential impacts on scholarships or financial aid eligibility.

If you have questions about course content, instructional approach, or academic freedom policies, please contact the Provost/VP of Academic Affairs (full email: [academicaffairs@lcsc.edu](mailto:academicaffairs@lcsc.edu)). We are committed to your success and to upholding LC State’s standards of academic excellence, respect, and transparency.