LEWIS CLARK STATE COLLEGE

CS311: Algorithms and Data Structures

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Office Location: TJH 210
Office Hours: M 1:30-3:00, Th 10:30-12:00

Semester and Year: Fa 2025
Course Location: MLH 310
Course Meeting Times: W 3:00-5:45
Credit Hours, Section: 4 credits (70 section)
Delivery Mode: Hybrid

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.

Pre-requisite / Co-requisite

CS211 with a C or better.

Course Learning Outcomes

Upon successful completion of this course, students should be able to demonstrate the following competencies:

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

Required Text/Materials

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.

Grades

Grading Policy/Evaluation

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)

Item	Percentage of Grade
Lab Assignments	15% total

Assignment and Grading Feedback

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.

Grading Scale

Letter grades will be assigned in the following way:

Letter	Percentage
A	100 – 90
B	80-90
C	70-80
D	60-70
F	Below 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.

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. Ask ahead of time if you have circumstances that require an extension.

Course Schedule

Week Of	Course Content
Aug 18	C++ Review and Pointers
Aug 25	C++ Objects and Template Classes
Sep 1	Linked Lists

Week Of	Course Content
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 310git

*The instructor reserves the right to make changes to the course schedule, as needed, to accommodate situations that may arise throughout the semester. Notice shall be given (in-class, on Canvas, etc) as soon as any changes need to be made.

Shared College Information

Consumer Information

The Higher Education Act of 1965 (amended in 1988 and 2008) requires all post-secondary institutions offering federal financial aid programs to provide key data to both prospective and current students. To comply with this requirement, LC State has developed a consumer information webpage (full URL: https://www.lcsc.edu/consumer-information) for your reference.

Student Rights and Responsibilities

Students are responsible for knowing their program requirements, course requirements, and other information associated with their enrollment at LC State. Students should review the LC State General Catalog (full URL: http://catalog.lcsc.edu/) and the LC State Student Handbook (full URL: https://www.lcsc.edu/media/13291/lcsc-student-handbook-8923-upload.pdf) for more information.

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) 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). We are committed to your success and to upholding LC State's standards of academic excellence, respect, and transparency.

Academic Freedom

Lewis-Clark State promotes, values, encourages, and creates an environment that adheres to the principle of academic freedom. Deep at the institutional core is the intellectual pursuit of all knowledge and theories, thought, reason, and perspective of truth for all LC State students, faculty, staff, and administrators.

A student's right to academic freedom and expression are specifically identified in the student handbook, which essentially states concepts expressed in the classroom are for educational purposes, and a student's adherence to any belief system will not be used as evaluative criteria.

Disclosures

During this course, if you elect to discuss information with your instructor that you consider to be sensitive or personal in nature, and not to be shared with others, please state this clearly. Your confidentiality in these circumstances will be respected unless upholding that confidentiality could reasonably put you, other students, or other members of the campus community in danger. In those cases, or when faculty are bound by law to report what you have shared, such as incidents involving sexual assault or other violent acts, a report will be submitted to appropriate campus authorities.

Student Health & Wellness

Students at LC State have access to health services at Student Health Services (full URL: https://www.lcsc.edu/student-health) and mental health services at the Student Counseling Center (full URL: https://www.lcsc.edu/student-counseling) on campus. In the event of an emergency, please seek medical help, and if necessary, report the incident to LC State Security (208-792-2226). Fieldtrips or other special student activities may also require students to submit a signed participation waiver (forms are obtained from the supporting Division Office).

Accessibility Accommodations

Students requiring special accommodations or course adaptations due to a permanent or temporary disability and/or health-related issue should contact Accessibility Services (LIB 161, 208-792-2677). Information can also be found on the Accessibility Services website (full URL: https://www.lcsc.edu/accessibility-services). Official documentation may be required to provide an accommodation and/or adaptation.

Academic Integrity

Academic dishonesty, which includes cheating and plagiarism, is not tolerated at LC State. Individual faculty members will impose their own policies and sanctions regarding academic integrity situations. Students who have been sanctioned for academic dishonesty may be referred to the VP for Student Affairs for official disciplinary action.

Artificial Intelligence (AI)

It is recommended instructors include a statement documenting the AI usage expectations for their course. The Academic Affairs, Information for Faculty website (full URL: https://www.lcsc.edu/academic-affairs/information-for-faculty) offers several AI Statements to help instructors relay expectations of how students may use AI for the course.

Illegal File Sharing

Students using LC State's computers and/or computer network must comply with the college's appropriate use policies and are prohibited from illegally downloading or sharing data files of any kind. Specific information about the college's technology policies and its protocols for combating illegal file sharing is contained in LC State Policy 1.202 - Appropriate Use Policy for Technology (full URL: https://www.lcsc.edu/media/2627/1202-appropriate-use-for-technology-accessible.pdf).

Testing Center for In-Person Proctoring (Remove if not needed)

This course has proctored exams. If you are located at the Lewiston Campus, you can take proctored exams at the LC State Testing Center. It is located in the Library Building, Rm 161; call to schedule your exam - 208-792-2100.

If you are located near the Coeur d'Alene Center, you may use the NIC Testing Center. They are located on the second floor of Molstead Library; call to schedule your exam - 208-616-7203. If located at a distance, you can arrange to use an approved proctor at your location. You will need to contact the LC State Testing Center (full URL: https://www.lcsc.edu/testing-center) to have a proctor approved and arrange to have test passwords and/or materials sent to your local proctor.