

CS 311 Fall 2019 Syllabus

COURSE: CS 311 Data Structures and Algorithms. 3 credits.
Time & place: 1–2 pm MWF, 342 Duckering.
Prerequisites: CS 202.

INSTRUCTOR: [Glenn G. Chappell](#), Dept. of Computer Science.
Office: 539 Duckering.
Office hours: 11:45–12:45, 2:15–3:15 MWF on fall 2019 class days,
or by appointment.
Office phone: [474-]5736. *E-mail is preferred to phone calls.*
E-mail: ggchappell@alaska.edu
Paper mailbox: Inside the Computer Science Department office, 527 Duckering.

TEXT: *There is no required text.*
Readings will be provided by the instructor.

WEB PAGE: http://www.cs.uaf.edu/~chappell/class/2019_fall/cs311
UA Blackboard Learn will be used only for project submission and online quizzes.

Course Topics & Goals

CS 311 builds on CS 202. Emphasis is on writing robust, reliable, maintainable code to organize information (data structures) and work with it (algorithms), with minimal use of time and other resources (efficiency).

Topics: advanced C++, software engineering concepts, recursion, searching, algorithmic efficiency, sorting. Then data abstraction & structures: array, Linked List, Stack & Queue, trees, Priority Queue, Tables. Briefly, external data and graph algorithms.

Upon successful completion of CS 311, students should:

- Have experience writing and documenting high-quality code.
- Understand proper error handling, enabling software components to support robust, reliable applications.
- Be able to perform basic analyses of algorithmic efficiency, including use of big- O and related notation.
- Be familiar with various standard algorithms, including those for searching and sorting.
- Understand what data abstraction is, and how it relates to software design.
- Be familiar with standard container data structures, including implementations and relevant trade-offs.

Important Dates

Also see the Semester Plan, on the class webpage.

Mon, Sep 2	No class (Labor Day)
Fri, Oct 11	In-class Midterm Exam
Fri, Nov 1	Last day to withdraw ("W" on transcript)
Wed, Nov 27–Fri, Nov 29	No class (Thanksgiving)
Fri, Dec 6	Last regular class meeting
Fri, Dec 13	Final Exam 1–3 pm in the classroom

Procedures

Class meetings—Lecture-discussion format.

Quizzes—Quizzes will be given both in class and online. No make-up quizzes will be given. **In-class quizzes** will be unannounced. However, possible quiz topics will always be posted at least 24 hours in advance on the class webpage. **Online quizzes** will be taken on the UA Blackboard Learn site. These will be announced on the class webpage at least 48 hours in advance.

Projects—Projects will be assigned every week or two, and will consist largely of C++ programming. Some projects will be done individually; others may be done in groups. Projects turned in late will generally be penalized.

To do the coding, students must obtain access to a C++ compiler with support for the 2017 ANSI standard. Any version of a major compiler that was released within the past year is acceptable. Appropriate compilers are available in the CS labs.

Exams—Two exams will be given: a Midterm and a comprehensive Final. See *Important Dates*.

Grades

Course grades will be based on points earned, using a 90-80-70-60 scale. The +/- grading system will not be used. Point totals will be as follows.

Projects (total)	480 pts
Quizzes (total)	170 pts*
Midterm Exam	150 pts
Final Exam	200 pts
TOTAL	1000 pts

*At the end of the semester, the total points possible on quizzes may differ from this. Quiz scores will be scaled accordingly, so that the total is as stated above.

Policies

Students are expected to be at every class meeting on time, and are responsible for all class content, whether present or not. If absence is necessary, work (other than quizzes) may be made up only if the instructor is notified as soon as possible; in particular, absences due to scheduled events must be arranged ahead of time.

Students who fail to attend the first class meeting after registering for the class, or who miss four consecutive class meetings, may be dropped/withdrawn without warning, unless prior arrangements are made with the instructor.

Academic dishonesty will not be tolerated, and will be dealt with according to UA procedures.

Students pay the CS lab fee. Payment allows access to the CS labs.

UAF academic policies: <http://catalog.uaf.edu/academics-regulations>

CS Department policies: <http://www.cs.uaf.edu/departmental-policies>