Casper College Course Syllabus
COSC 2030 — Computer Science II
Fall 2015

Lecture hours: 3	**Lab hours:** 2	**Credit hours:** 4
Class time: 8–8:50 a.m.	**Days:** MTWThF	**Room:** PS 325
Instructor's name: Kevin Lenth	**Office:** PS 335	
Office hours: M 1–2, T 11–12 & 1–2, W/Th/F 11–12	**Office phone:** 268-2519	**E-mail:** lenthk@caspercollege.edu

Course Description

Studies the use and implementation of abstract data structures in an object-oriented programming environment. Topics include lists, stacks, queues, tables, binary trees, graphs, space and time complexity, recursion, and recursive data types. Programming exercises and experimentation with software in a closed laboratory supplement the discussion.

Prerequisites

COSC 1030

Goal

Building on the facility with programming obtained from COSC 1030, this course develops data structures and algorithms frequently used in the field of computer science.

Outcomes

General education

This course meets the following Casper College general education outcomes:

3. Solve problems using critical thinking and creativity

8. Use quantitative analytical skills to evaluate and process numerical data

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Course objectives

Upon successfully completing this course, students will be able to

* explain the need for data structures such as lists, stacks, queues, and binary trees;

* implement linked- and array-based variants of lists, stacks, and queues;

* classify functions based on space and time complexity using asymptotic notation;

* implement common sorting algorithms, including insertion sort, merge sort, and quick sort.

Methodology

This course is presented as a lecture supplemented with laboratory work and hands-on experimentation.

Evaluation Criteria

The grade breakdown is as follows.

Assignments	45%
Tests	$3 \times 15\%$
Labs	10%

Final grades will follow the usual 60/70/80/90 scale (90% or higher is an A, etc.) with the following exceptions:

* Students shall not receive a passing grade unless they earn a passing grade (60% or higher) within each category individually. For instance, a student who has 70% overall but only 40% on assignments will receive an F.

* Students who demonstrate dedication to the course (i.e., good attendance, much class participation, frequent office hour visits) may have their final grade bumped upward in borderline cases at the instructor's discretion.

Assignments will be given to allow students to master each section of course material and may take the form of either written work or a program. In the case of programming assignments, the grade breakdown is summarized below.

Weight	Requirements
70%	The submission correctly and completely implements the required behavior
10%	The submission is structured in a reasonable fashion and makes use of appropriate language constructs
10%	The submission is adequately commented and easy to read
10%	A sufficient narrative document is supplied

If the submitted program does not compile, no grade higher than 50% will be awarded.
Each programming assignment submission must be accompanied by a *narrative document*, a brief description of the purpose of the program along with a discussion of the process of writing the program (challenges, mistakes found, additional resources used, etc.).

Paper *tests* will be administered upon three occasions in class. The goal of these tests is to assess general *knowledge* of the material, as opposed to *capability* which is measured by programming assignments. Tests are not cumulative (beyond

the inherently cumulative nature of the subject); students are not permitted use of the book, notes, a calculator, the Internet, or any other resources while taking a test except as specifically permitted by the instructor.

Class quizzes will be given frequently throughout the semester to check understanding of the day's reading assignment. *The class quiz grade replaces the lowest test grade when final grades are computed at the end of the semester,* provided this would enhance the student's grade.

Required Text, Readings, and Materials

The required textbook is *Starting Out with C++ Early Objects* (eighth edition) by Gaddis, Walters, and Muganda (ISBN-13: 978-0-13-336092-9). The student may obtain a traditional physical copy of the book or an electronic edition (available at coursesmart.com among other sites) at his or her option. The included student access code is not required.

The course Moodle shell (accessible from `https://moodle4me.caspercollege.edu/`) will be used extensively: daily readings, homework assignments, and announcements will be posted thereon.

Class Policies

Last Date to Audit or Withdraw: November 12th

Attendance. Every student is expected to attend every class meeting with punctuality.

Class participation. All students are expected to participate actively in class; this entails asking questions and being receptive to questions asked by the instructor. Students are also expected to use the classroom computers for purposes related to class, i.e. taking notes and following along in examples. Excessive or disruptive use of the computers for non-class-related activities will result in ejection from the class.

Late assignments. Assignments will be accepted up to five days after their due date with a penalty of 10% credit for each day.

Syllabus emendation. The instructor reserves the right to amend this course syllabus at any time. If this occurs, an announcement will be made and the modified syllabus will be made available to the class.

Student Rights and Responsibilities

Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College student.

Chain of Command

If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty

Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication

Casper College faculty and staff will employ the student's assigned Casper College e-mail account as a primary method of communication. **Students are responsible for checking their account regularly.**

The instructor's e-mail address is lenthk@caspercollege.edu (*not* klenth@caspercollege.edu); e-mail is the best method of contacting the instructor outside of class or office hours. Class announcements will be made via the course's Moodle shell.

ADA Accommodations Policy

If you need academic accommodations because of a disability, please inform the instructor as soon as possible. See him privately after class or during his office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Course Calendar

Week(s)	Topic
1–2	Chapter 9 — Searching and sorting; algorithmic analysis
3–4	Chapter 10 — Pointers and dynamic memory
5–6	Chapter 11 — Advanced object-oriented programming
	Test 1
7–8	Chapter 14 — Recursive algorithms
9–10	Chapter 16 — Exceptions and templates
	Test 2
11–12	Chapter 17 — Linked lists
13	Chapter 18 — Stacks, queues, and deques
14–15	Chapter 19 — Binary trees and hashing; sets and maps
	Test 3