CS 201

Fundamentals of Computer Science II

Fall 2019

Instructor: [Donald J. Hake II](#) djhake2@ycp.edu

Office Hours: W/F in KEC123: 9:15-10:00, 11:15-Noon, 1:15-2:00; W/F in KEC137: 2:00-4:00, and by appointment

Section	Days	Time	Room	Final Exam
101	Wed/Fri	10:00-11:15	KEC 123	Fri, Dec 13, 10:15-12:15
102	Wed/Fri	12:00-1:15	KEC 123	Fri, Dec 13, 12:45-2:45

Course Description

This course introduces advanced object-oriented constructs such as abstraction, virtual methods, and generic classes. Advanced data structures including arrays, linked lists, queues, stacks, trees, heaps, and hash tables will be discussed both natively as well as through standard template libraries. Fundamental sorting and searching algorithms will be introduced. Basic analytical and proof techniques will be used to characterize the data structures and algorithms discussed. The course will focus on implementing applications from computer science and engineering using languages such as C++/C#/Java.

Prerequisites

CS 101 with a grade of 2 or better

Textbook

Mark Allen Weiss, [Data Structures & Problem Solving Using Java, 4th ed.](#)

Course Structure and Expectations

Class meetings will be a mix of lecture/discussion and in-class lab exercises designed to illustrate the concepts we are covering. A series of programming projects in the Java programming language will be assigned at approximately 1-2 week intervals, to be completed individually. Written homework assignments may be assigned.

We will use the Eclipse IDE for labs and programming assignments in Java. This is available for free from www.eclipse.org. (You will also need the Java Development Kit (JDK) available from

) Make sure you get version 1.8 or higher.

In-class quizzes will be given frequently, typically at the beginning of class. One missed quiz will be forgiven. Quizzes may not be made up.

There will be three midterm exams and one comprehensive final exam. The dates are shown in the Schedule.

We will be covering a significant amount of material in the course, and it is very important that you keep up. If you have any questions, please ask me in class, office hours, or through email. I'm here to help!

Learning Outcomes

By the end of this course, you will be able to:

1. Use an object-oriented programming language effectively
2. Understand and use abstract data types such as lists, stacks, queues, maps, and sets
3. Understand and use fundamental data structures such as arrays, linked lists, trees, and hash tables
4. Implement basic array- and list-based data structures
5. Understand and implement fundamental algorithms such as searching and sorting
6. Analyze algorithms to determine their asympotic running time
7. Express upper bounds using big-O notation
8. Understand and use recursion
9. Solve recurrences
10. Use proof by induction

Policies

Grades

Grades are assigned on a 100-point scale:

Numeric Range	Letter Grade
90-100	A (4.0)
85-90	B+ (3.5)
80-85	B (3.0)
75-80	C+ (2.5)
70-75	C (2.0)
60-70	D (1.0)
0-60	F (0.0)

Your overall grade for the course will be determined as follows:

- Homework and programming assignments: 30%
- Exams (3 midterm exams and 1 comprehensive final exam): 60% [*]

- Labs, attendance/participation: 5%
- Quizzes: 5%

[*] Note that you must earn a score of 70 or above on *at least one exam* and have at least a 60% average on your top 3 exam scores in order to receive a grade of 2.0 or higher for the course.

Course website

Please check the course web page, http://ycpcs.github.io/cs201-fall2019, regularly for important announcements.

Reading Assignments

Reading assignments are posted in the Schedule at the end of this syllabus. We expect you to do the reading **before** class. When we give a lecture, we will assume you have done the reading. We encourage you to use class time to ask questions about parts of the reading you did not understand to your satisfaction.

Homework assignments

You **must** make a legitimate attempt to complete every homework assignment. We reserve the right to fail any student who does not make a good faith effort to complete all of the homework assignments.

Posting and submission of assignments and labs

Assignments and labs will be posted as zip files on the course web page, http://ycpcs.github.io/cs201-fall2019.

Assignments and labs will be submitted using the server https://cs.ycp.edu/marmoset. You will receive an email containing the username and password you should use for this server.

Academic Integrity

The following academic integrity policy pertains to all individual assignments:

> Because the individual assignments are essential for working towards and demonstrating the achievement of the course outcomes, and outcomes 1–3 in particular, you must solve them on your own. You may discuss the problem and high-level (pseudo-code) approaches to solving the problem with other students. You may *not*, under any circumstances, discuss or share concrete implementation techniques or code. Examples of forbidden types of collaboration include, but are not limited to: looking at another student's code, allowing another student to see your code, viewing and/or using code from an external source such as a web page, discussing the use of specific API functions to solve a problem, giving or receiving help debugging specific code.

Exams must be completed individually.

You may work with other students on labs. However, we do expect you to complete and submit them, and they count towards your participation grade: see "Lab Policy" below.

Any violation of the course's academic integrity policy will be referred to the Dean of Academic Affairs, and could have consequences ranging from a 0 on an assignment to dismissal from the college.

Lab Policy

In order to receive credit for completing a lab, you need to get a sign-off from your instructor *in person*. There are two options for this:

1. For 100% of full credit: Get a sign-off by the end of the *next* class (i.e., the class that follows the one in which we work on the lab in class.)
2. For 80% of full credit: Get a sign-off **by the last class before the next exam**.

We *strongly* recommend that you work on the labs before you come to class, so that when you come to class, you have made a good start on it and are ready to ask questions about it.

Late Assignments

Late assignments will be marked down 10% per day late. **No credit will be given for assignments that are more than two (2) days late.** NOTE: Even though you **will not** receive any graded credit for submissions more than 2 days late, **you must still submit a good faith attempt for the assignment before the final exam.**

Exams

No make-up exams will be given without approval of the instructor prior to class unless proof of extreme emergency or illness is provided. All exams will be open book and closed notes.

Attendance and Participation

We expect you to attend class and participate regularly in class activities. If you miss a class, please notify me in advance. You are responsible for all material covered in class, regardless of whether or not you were present. If you attend and participate in class regularly, you can expect to receive full credit for attendance and participation. Frequent absence and/or lack of participation will reduce the credit you receive for attendance and participation. You are responsible for keeping up with the reading assignments as described in the schedule below.

Professionalism

We expect you to conduct yourself as a professional in this course. Professionalism includes:

- Respect for and courteous interaction with peers, faculty and facilities;
- Integrity, which includes at its core honesty, responsibility and accountability for one's own actions;
- Sensitivity and appreciation for diverse cultures, backgrounds, and life experiences;
- Constructive evaluation, which means that criticism is offered and accepted in a productive manner;
- Self-reflection and identification of one's own strengths and weaknesses;
- Responsibility for one's own education and learning;
- An attitude that fosters professional behavior in colleagues and peers;
- Punctuality at meetings and class sessions;

- Attentive behavior during class sessions, avoiding personal or social use of cell phones, laptops, or other electronic devices;
- Acknowledgement of the Kinsley Engineering Center as a professional workplace, and treatment of this facility as a business or office space, not as an informal space.

We reserve the right to enforce this code through the York College Code of Student Conduct.

Use of Personal Technology in the Classroom

While York College recognizes students' need for educational and emergency-related technological devices such as laptops, PDA's, cellular phones, etc., using them unethically or recreationally during class time is never appropriate. The college recognizes and supports faculty members' authority to regulate in their classrooms student use of all electronic devices.

Communication Standards

York College recognizes the importance of effective communication in all disciplines and careers. Therefore, students are expected to competently analyze, synthesize, organize, and articulate course material in papers, examinations and presentations. In addition, students should know and use communication skills current to their field of study, recognize the need for revision as part of their writing process, and employ standard conventions of English usage in both writing and speaking. Students may be asked to further revise assignments that do not demonstrate effective use of these communication skills.

Disability Support Services

If you had an IEP or 504 plan in high school or if you have a disability or health condition that impacts you in the classroom, please contact Linda Miller, Director of Disability Support Services, at 815-1785 or lmille18@ycp.edu to discuss obtaining the accommodations for which you may be eligible. If you already have an accommodation memo and wish to access your accommodations in this class, please see me confidentially to discuss.

Disclaimer

This syllabus is subject to change by the instructor.