OVERVIEW

This is a second level course in Computer Science. The course will cover Java programming from basics to object oriented concepts. Digital media is used in this course as the primary motivation for learning programming skills and venue for programming problems. Data structures are introduced as a means of representing problems for modeling. Abstract data structures covered include dynamic arrays, linked lists, queues, and stacks. Recursive programming is introduced as a means for developing more sophisticated models.

COURSE LEARNING OBJECTIVES

After completing this course, students will

1. Understand and correctly use data structures
   a. Learning methods: Lecture, interactive class discussions, guided examples, programming projects
   b. Assessment methods: Exams, programming projects, class participation
2. Understand and correctly use core tenets of object-oriented programming
   a. Learning methods: Lecture, interactive class discussions, guided examples, programming projects
   b. Assessment methods: Exams, programming projects, class participation
3. Understand the nature of objects as consisting of data and methods
   a. Learning methods: Lecture, interactive class discussions, readings, guided examples
   b. Assessment: Exams, programming projects
4. Be able to design and implement classes for problem solving
   a. Learning methods: Lab exercises, programming projects
   b. Assessment methods: Lab exercises, programming projects
5. Be able to declare and manipulate arrays
   a. Learning methods: Lab exercises, programming projects
   b. Assessment methods: Lab exercises, programming projects
6. Be able to declare and manipulate linked-lists
   a. Learning methods: Lab exercises, programming projects
   b. Assessment methods: Lab exercises, programming projects
7. Be able to design and implement recursive algorithms
   a. Learning methods: Lectures, lab exercises, programming projects
   b. Assessment methods: Exams, lab exercises, programming projects
8. Understand and explain digital multimedia representation and computation
   a. Learning methods: Lecture, interactive class discussions
   b. Assessment methods: Exams, participation in class discussions
INSTRUCTOR

Name: Benjamin Carle
Contact: becarle@vassar.edu
Office: OLB
Office Hours:
   • Tuesday 9:30 - 10:30
   • Tuesday 3:30 - 4:30

REQUIRED ITEMS

iClicker:
   • This is an electronic clicker that we will use in lecture for quizzes. You may purchase it at the bookstore. It is a required item for the course.

LECTURES

There are two lectures per week:

Time: Tuesday 10:30 - 11:45
      Thursday 10:30 - 11:45
Room: OLB 105

It is very important that you attend lecture - it is where most of the material that you need to know is presented. Although there is substantial overlap with the material in the books, additional material and techniques are presented in the lectures. There will be iClicker questions almost every day in lectures as well. Also, you are responsible for all announcements made in lecture.

LABS

In addition to the lectures, you must also attend laboratory sessions. They are an integral part of the course. Lab sessions meet every week. In the laboratories, you will learn the hands-on aspects of the course.

Time: Tuesday 4:35 - 5:50
Room: OLB 105

You may make-up a missed lab within two weeks of the date of the lab. After two weeks a lab cannot be made-up.

PROGRAMMING ASSIGNMENTS

Programming assignments will be individual exercises to be completed by the student outside of class. They will generally require more time to complete than lab assignments and will help relate the course concepts to real-world applications. No discussion or sharing of solutions between students is permitted for programming assignments. Programming assignments will be posted on the course wiki and submitted electronically through the submit command.
IClickers

In this course, we will use iClickers clickers in the lectures for quizzes. iClicker points will account for 20% of your course grade.

iClickers can be purchased from the iClicker website (http://www.iclicker.com), Amazon, or other online vendors. There are two models of handset to choose from: iClicker (First Generation) or iClicker+. The iClicker+ is basically the same handset as the original iClicker in a smaller, more battery-efficient case. The iClicker+ looks nice, but you may find a better deal on the iClicker. Prices range from $30 - $38. Do not purchase an iClicker2. It is more expensive, and the extra functionality is not necessary for this course.

It is your responsibility to attend lecture, bring your clicker, have fresh or spare batteries for your clicker, etc. Because everyone occasionally misses class, forgets clickers or batteries, etc., everyone will start with 15% of the possible clicker quiz points. For example, suppose we have 80 points worth of quizzes. Everyone will start off with 12 (= 15% of 80) points. That way a few bad days will not harm your class grade. The possible clicker points will be capped at 100% of the total. Also, see the section about Academic Integrity and clickers, below.

We will begin including iClicker questions in lectures on September 19.

Examinations

- There will a midterm exam and a final exam. These are open book, open notes examinations. No electronic devices will be allowed during exams, including computers, phones, iPods, calculators, etc. The dates of the exams are:
  
  Midterm: Thursday, October 10, 10:30am - 11:45am in RH-300-Auditorium
  
  Final: Tuesday, December 17, 5:00pm - 7:00pm in RH 310/312

- Makeup exams will be given only for valid and verifiable excuses (e.g. a major medical situation). If you are going to miss an exam, you must contact your instructor ahead of time and arrange to take a make-up exam at an alternate date/time. In general, a makeup exam will be harder than the regular exam.

Grades

The grades given in this course are based upon a student’s performance on the various course components. The relative worth of each component is:

- Laboratory Assignments 20%
- Programming Assignments 20%
- iClicker 20%
- Midterm Exam 20%
- Final Exam 20%
The following inequalities give an upper bound on the cutoffs for letter grades. Final grade assignments will be roughly based on this scale. Actual grade cutoffs may be lower as determined by overall class performance.

\[
\begin{align*}
A, A- & \geq 90\% \text{ of the weighted course value of all assignments} \\
B+, B, B- & \geq 80\% \\
C+, C, C- & \geq 70\% \\
D+, D, D- & \geq 60\% \\
F & < 60\%
\end{align*}
\]

I reserve the right to curve particular components if I feel there is an undue skew. If this is necessary I will announce the details in lecture.

**ACADEMIC INTEGRITY**

Assignments and all examinations in this course are individual exercises. The work that you do must be yours - not that of other students, friends, tutors, etc. While it may seem like the easy way out of doing the assignments to copy them from others, this strategy will backfire on the tests, when you will not know the material you would have learned from doing the assignment. You may of course form study groups, discuss assignments and techniques in general terms, etc., but the assignments themselves must be your own work. In particular, two or more people may not create an assignment together and submit it for credit. Please ask if you have any questions about academic integrity.

**Academic Integrity and iClickers**: iClickers are made for individuals to take quizzes in class. It is a serious instance of cheating to use another student's clicker in class. This includes using multiple clickers, etc. Any instance of cheating with clickers is serious, and will be handled as such.