CMPU 101 §5
Problem-Solving and Abstraction
Fall 2019

Monday & Wednesday, 10:30–11:45 a.m.
Friday, 9:00–11:00 a.m.
Sanders Physics 309

Prof. Jonathan Gordon
cs.vassar.edu/~cs101/5

Overview

This course introduces fundamental concepts of computer science. Its major goal is to introduce students to the principles of systematic problem-solving through programming and the basic rules of computation. We will explore the art and science of problem-solving using the computer as a tool. This course introduces a series of design recipes that help develop fundamental data abstraction and problem-solving skills. We will write programs in a series of student learning languages based on subsets of Racket, a simple, yet powerful, functional programming language.

Prerequisites

The course does not assume any prior programming experience. It is suitable for all students – majors and non-majors alike – who wish to explore the ideas of the discipline.

Continuing in Computer Science

The problem-solving techniques introduced in this course extend seamlessly to CMPU 102, where Java and object-oriented programming are introduced, and to CMPU 145, which continues the use of functional programming.

Calendar

The calendar with lecture notes, assigned readings and exercises, and exams is on the course website and will be updated throughout the semester.

In addition to faculty office hours, student coaches will be available during scheduled labs and at other peak hours of laboratory use, such as evenings and weekends. The coaching schedule will be published online.
Textbook

*How to Design Programs*, second edition.
Felleisen, Findler, Flatt, and Krishnamurthi

The textbook is available for free online at [htdp.org](http://htdp.org).

Computing Environment

We will use DrRacket, version 7.4, a programming environment for the Racket programming language. Racket is a variant of Scheme, which is itself a descendant of Lisp, the second oldest high-level programming language. For this course we will use the student languages (bsl, isl, asl) from the *How to Design Programs* textbook, and teachpacks for graphics and interactive animation that DrRacket provides.

DrRacket is installed on the computers in our classroom and labs. It can also be downloaded from [racket-lang.org](http://racket-lang.org) if you want to install it on your own computer. Programs written in DrRacket have the same behavior on all platforms (e.g., Linux, macOS, Windows). You therefore do not need to worry what kind of machine you use when you run DrRacket programs.

How to Succeed in CMPU 101 by Really Trying

This is designated as a quantitative course, satisfying one of Vassar's three requirements for graduation. Just like any quantitative course, it will challenge you to think abstractly, analytically, and logically. It's my sincere hope that you enjoy this class, but the unavoidable truth is that learning computer science takes time, effort, and practice. So, here's some advice:

1. **Keep up with the reading and assignments.** The course starts out with basic concepts, but each week builds on top of what was seen previously.

2. **Attend class regularly.** Missing one lecture may prevent you from fully understanding the next, which may prevent you from completing a lab or assignment, and so on.

3. **Ask questions.** Don’t hesitate to ask questions in class, in lab, and during office hours.

4. **Practice, practice, practice.**

Coursework

To assess your understanding of the topics presented in this course, there will be weekly labs and assignments, two midterm exams, and a final exam (during the final exam period).
Labs

The purpose of the labs is to give you some hands-on experience with the actual tools, and to explain some of the principles from lecture with hands-on examples.

Assignments

One of the purposes of the assignments is to prepare you for the exams. Some assignment problems are drawn from the *How to Design Programs* textbook; others are constructed for this instance of CMPU 101.

Exams

The exams are open-book, open-note, and will take place in lieu of the lab session for that week.

Attendance and Lateness

If you are unable to attend class on the day of an exam, it is your responsibility to notify the instructor in advance to make other arrangements. Late assignments will be penalized, and will not be accepted once solutions have been discussed in class.

Course Grades

The elements of the course will be weighted approximately as follows:

- Assignments and labs 40%
- Exam 1 20%
- Exam 2 20%
- Exam 3 20%

Academic Integrity

Please don't cheat. Read *Going to the Source*. Since this course is concerned with composing code, the guidelines that apply to writing in general apply equally to the writing of computer programs. Copying someone else's code without attribution amounts to plagiarism. So give proper attribution for the help you receive. Quoting from Chapter X of *Going to the Source*, “In suspected cases of plagiarism, the instructor prepares a written statement of complaint to the Academic Panel.” Please don't put yourself or your professor in that position. When in doubt, ask your professor or a coach before seeking any help from another source.
Academic Accommodations

Academic accommodations are available for students registered with the Office for Accessibility and Educational Opportunity (AE0). Students in need of disability (ADA/504) accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AE0 accommodation letter.

Title IX

Vassar College is committed to providing a safe learning environment for all students that is free of all forms of discrimination and sexual harassment, including sexual assault, relationship abuse, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. Vassar College has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware all Vassar faculty members are “responsible employees,” which means that if you tell me about a situation involving sexual harassment, sexual assault, relationship abuse, or stalking, I must share that information with the Title IX Coordinator. Although I have to make that notification, the Title IX office will only provide outreach by email. You will control how your case will be handled – you don’t have to read or respond to the email, and it is completely up to you whether to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone privately, you can contact any of the following on-campus resources:

- Counseling Service (counselingservice.vassar.edu, 845-437-5700)
- Health Service (healthservice.vassar.edu, 845-437-5800)
- Nicole Wong, SAVP (Sexual Assault and Violence Prevention) director (savp.vassar.edu, 845-437-7863)
- SART (Sexual Assault Response Team) advocate, available 24/7 by calling the CRC at 845-437-7333 and asking for SART

The SAVP website (https://savp.vassar.edu) and the Title IX section of the EOA website (https://eoaa.vassar.edu/title-ix) have more information, as well as links to both on- and off-campus resources.
Acknowledgments

This course – and this syllabus – is based in large part on work by other instructors, especially Marc Smith.