Syllabus

Handout 1
CSCI 334: Spring 2022

Principles of Programming Languages

Instructor	Prof. Daniel Barowy
Office	TCL 307
Email	dbarowy@cs.williams.edu
Office Hours	Thursdays, 4-5:30pm and Fridays, 5pm–6pm or by appointment in TCL 307
Lectures	Tuesday and Thursday 9:55–11:10am in Schow Library Classroom 030A
Web Page	http://williams-cs.github.io/cs334-s22-www

Readings

- **(Required)** CSCI 334 Course Packet
- **(Required)** Additional readings may be posted on the course web site.
- **(Optional)** *Practical C Programming*, Steve Oualline.

Course Objectives

Why do we have so many programming languages? Many of them, like Java and C#, do more or less the same thing. Others, like C and Prolog, are wildly different. A key insight is that programming languages are designed for humans, not for computers. Another key insight is that they are often designed for certain tasks. In this class, we will explore language designs, and why and how design choices might affect human productivity and program correctness. We will also "get under the hood" of a programming language, during which you will gain deep insights into how they work.

Outcomes. At the end of this course, you should be able

1. to know how to quickly learn an unfamiliar programming language;
2. to understand the inner workings of programming languages; and finally
3. to speak the "language of languages," so that you can talk about computation independently of a given programming language.

As in other CS courses, we will discuss alternative approaches for solving the same problem. Because programming languages are intrinsically tied up in (and motivated by) programming problems, we will not only investigate their features, but also the problems that led to their development.

Workload

Expect to spend at least 10 hours per week working on assignments outside of class meetings. Students in previous sections tell me that 10 hours per week is an accurate estimate of the time they spent. I strongly encourage you to block out time to work on CS334 problem sets. Starting early will also significantly reduce your stress level.

Lectures

Lectures are mandatory. I expect you to attend and participate.

Website

I post lecture slides and example code to the course website shortly after class, and add links to assignments and readings as they are assigned. Develop the habit of checking the website regularly.

Assignments

There are two kinds of assignments in this class:

1. "reading responses," which ask you to reflect on a reading assignment (due Wednesday evenings by 10pm), and
2. "labs," which are a combination of problem sets with written answers and programming assignments (due Sunday evenings by 10pm).

Both kinds of assignments are assigned weekly, typically by the Monday before the due date.

All homework should:

- be completed and pushed to Github no later than 10pm on the due date;
- include source code for questions involving programming;
- be typeset using LaTeX for non-programming questions (e.g., proofs); and
- list any students with whom you discussed the problems (see Honor Code handout).

Homework will not be accepted on paper or via email.

Thursday Quizzes

Thursday classes will begin with a short (5 minutes) quiz each week, with a topic drawn from the week's reading response assignment. You can best prepare for these quizzes by completing the assigned reading responses. There will be no make-up quizzes (even if you miss class), however the two lowest quiz scores will be dropped from your final grade.

Lab Resources for Homework Assignments

You are strongly encouraged to use the Computer Science Department's Unix "lab" computers for the programming problems. These computers are preconfigured with all of the required software. If you are not familiar with the Unix computing environment, please speak with me or the TAs as soon as possible so we can bring you up to speed on what you need to know. You may also see Mary Bailey to get your Unix password if you have forgotten it.

Two computer labs are available for use in this class:

1. TCL 312 and

2. the "Ward Lab" in TBL 301.

You may use your personal computer for assignments, but please be advised that if you do so, technical support issues are your own responsibility.

Exam and Final Project

There will be a midterm exam covering both lectures and readings. Your final evaluation will be a group programming project and presentation.

Grading

Your final grade will be determined according to the following formula:

Midterm: 20%
Final Project: 20%
Homework assignments: 30%
Writing assignments: 10%
Quizzes: 10%
Attendance and class discussion: 10%

Grades understandably cause anxiety among many students, and as somebody who has spent most of their life in school, trust me, I understand. If you are spending lots of mental energy worrying about grades, please see me and we can discuss your worries in private. I try to give you a great deal of control over your final grade, and while I can't promise you an A, any student who earnestly applies themselves to the challenges in this course and learns from their mistakes has little to worry about. Just do your best.

Late Days and Resubmissions

Due dates for this class are firm—there are no "late days" for assignment submissions. You should always submit something by the due date so that we can award you at least partial credit. Nevertheless, you have **up to three** assignment resubmissions during the semester. This policy includes all labs except the last one and the midterm exam. You cannot resubmit the final project.

A resubmission will be accepted at the discretion of the course instructor and allows you to earn back **up to 50% of the missing points**. For example, if you received a 75% on an assignment, you may earn up to 87.5% upon resubmission.

Resubmissions must be submitted in the following manner:

1. They must be submitted before the end of the final exam reading period.
2. They must include both the original work and the new submission.
3. They must be accompanied with a typed document, written in plain language, that explains, for every misunderstanding:
   (a) what the error is in the original work,
   (b) how you fixed the error, and
   (c) why the new version is correct.

Please note that resubmissions must be typed or they will not be accepted.

Help!!!

There are many resources available when you need it. You are encouraged to discuss any questions, concerns, difficulties, or thoughts about the course with me. In addition, TAs are available to help you with challenges you face as you work through the course material and lab assignments. You are welcome at any time to approach any course staff to ask for clarification of the assignments, and to discuss your problem-solving process. You do not need to wait until you are stuck and frustrated to speak with us!

If you find yourself facing challenges beyond the typical, please do not stay silent. Talk to your instructor, a friendly face from the Dean's Office, or one of the many professionals across campus who stand ready to help. All faculty and staff at Williams are bound by the Family Educational Rights and Privacy Act (FERPA) to maintain the privacy of your educational records. We understand that difficulties arise, and we are prepared to help you.

You will never be penalized for seeking help!

Contrary to popular belief, the most successful students are not "effortlessly successful." Instead, they get to know course staff early on and they familiarize themselves with an institution's academic support resources. Williams has ample support resources, including

- The Peer Tutor Program: Tutors can be arranged when 1-on-1 help is required beyond that available from your instructor and TAs.
- Math & Science Resource Center: Support is available for students grappling with the more quantitative aspects of their coursework.
- Accessible Education and Disability Support Center: Students with documented disabilities may require accommodations in certain situations.
- The Health Center: Sometimes your challenges are not course-related. The Health Center provides a range of medical, psychological, and health/wellness services.

Inclusivity

The Williams community embraces diversity of age, background, beliefs, ethnicity, gender, gender identity, gender expression, national origin, religious affiliation, sexual orientation, and other visible and nonvisible categories. I welcome all students in this course and expect that all students contribute to a respectful, welcoming and inclusive environment. If you feel that you are not being welcomed, included, or accepted in this class, please come to me or a college administrator to share your concerns. You may be surprised to learn that I have these conversations with students regularly and even welcome them. Our shared goal is computer science—if I can help you remove obstacles on the way to that goal, I am always happy to help.

COVID-19

All of us face the possibility that we will become ill during the COVID-19 pandemic. I consider **your health to be your top priority**. Falling ill is not your fault, and your grade should not suffer as a result. If you contract the virus, I ask that you inform me as soon as possible. Should you fall ill, you are welcome to continue participating (virtually) in the class if you feel healthy enough to do so. If you do not feel healthy, consider your semester as "on hold" with no negative consequences. In coordination with the college deans, I will revisit your academic plan once you regain your health.