Syllabus

Handout 1
CSCI 334: Spring 2020

Principles of Programming Languages

Instructor	Prof. Dan Barowy
Office	TCL 307
Email	dbarowy@cs.williams.edu
Office Hours	Thursdays, 4-6pm (with CSCI 136) and Fridays, 5pm–6pm or by appointment in TCL 307
Lectures	Tuesday and Friday 1:10pm–2:25pm in Schow Library Classroom 030B
Web Page	http://williams-cs.github.io/cs334-s20-www

Readings

- **(Required)** CSCI 334 Course Packet
- **(Required)** Additional readings may be posted on the course web site.
- **(Optional)** *Concepts in Programming Languages*, John C. Mitchell.
- **(Optional)** *Practical C Programming*, Steve Oualline.
- **(Optional)** *The C Programming Language*, Brian Kernighan and Dennis Ritchie.

Course Objectives

Why do we have so many darned 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. In this class, we will explore language designs, and why and how they might have an effect on productivity and program correctness. You will also be given the opportunity to "get under the hood" of a programming language, gaining deep insights into how they work.

At the end of this course, you should be able

1. to quickly learn an unfamiliar programming language;
2. to know, at a deep level, how a programming language works;
3. and finally, to be able to speak the "language of languages," such that you can talk about computing problems 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 engineering problems that led to their development.

Time Commitment

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.

Schedule

The class schedule is posted on the course website. I will add links to assignments and readings as they are assigned. You should get in the habit of checking the schedule regularly.

Homework

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 11:59PM), and
2. "labs," which are a combination of problem sets with written answers and programming assignments (due Sunday evenings by 11:59PM).

Both kinds of assignments are assigned weekly, typically by the Sunday before the due date.
All homework should:

- be completed and pushed to Github no later than 11:59PM 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.

Tuesday Quizzes

Tuesday classes will begin with a short (5 minutes) quiz each week, with a topic drawn from the prior 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.

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, we allow **up to three** assignment resubmissions during the semester. This policy includes the first nine labs and the midterm exam, but not the final lab or 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.

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.

Three computer labs are available for use in this class:

1. TCL 316,
2. TPL 312, and
3. the new "Ward Lab" in TBL 301.

You may use your personal computer for assignments, but please be advised that if you do so, your 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%
Weekly reading responses: 10%
Weekly quizzes: 10%
Attendance: 10%

Each homework assignment has the same weight in your final grade; i.e., each assignment is normalized to 100 percentage points. You will note that some questions on the assignment have very different weights than other questions. This is both to place more importance on your response for such questions on a given assignment, but also to signal to you that those questions are more difficult.

Note that A grades are for exceptional work. It is a challenge to obtain an A grade. That said, this course will have many opportunities to make up for lost points: homework resubmission, bonuses, etc.

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 nothing to worry about. Just do your best.

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 your instructor (Dan). 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.

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.

You will never be penalized for seeking help!

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. We 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 us or a college administrator to share your concerns. You may be surprised to learn that we both have these conversations with students regularly and very much welcome them. Please let us know how we can support you!