

# CSC151: Programming Language Concepts

Smith College [Spring 2022]

## Instructor

Dr. Johanna Brewer  
jbrewer@smith.edu

Office: Bass 106

Discord: ultraroxy#3678

## Place & Time

Bass 102

Mondays

Usually 1:20-4:00pm

Occasionally 7:00-9:30pm

## Course Overview

Bridging the gap from writing your first program to creating complex data structures can be daunting. By practicing multiple ways of tackling challenges through code, this course instills the skills to become a more fluent programmer. In CSC151 you will:

- Configure and utilize local development environments
- Gain comfort with implementing core computer science concepts
- Solve problems with diverse languages (Python, Ruby, JavaScript, and Java)
- Master imperative, declarative, functional, and object-oriented paradigms
- Build confidence with learning new ways of "speaking in code"

Prerequisites: CSC111, experience in Python and basic understanding of programming

## Format & Workload

Class meets weekly on Monday afternoons, except once a month when it will be held in the evening. Those evening meetings will be marked on Moodle and announced the week prior with a reminder sent the day before. Classes will follow a **workshop format**. We will begin with a short lecture about the weekly topic, then switch to a hands-on lab followed by a head start on homework. You should expect to devote **9 hours per week outside of class** to complete your assignments.

## Assignments

The majority of your work will be devoted to **weekly programming assignments** designed to build your confidence as a coder and reinforce core computer science concepts. Along with your code, you'll submit **brief retrospectives** (~100 words) each week reflecting on your programming efforts. As the coursework progresses beyond Python, you will also complete a **series of trainings** (10-18 hours) in Ruby, Rails, and JavaScript. During the last month of the course, you will work in pairs or small groups to **develop a unique project** in a language of your choosing which you will demo for your peers.

## Readings

There is no coursebook for this class. All readings take the form of optional, though highly recommended, reference materials that will aid you in completing your assignments. These readings will be **provided via Moodle** and thus you are not obliged to obtain them yourself.

## Weekly Schedule

Week	Date	Topic	Assignments
1	Jan. 24	<b>Getting comfy with your environment</b> IDEs, command line navigation, local development	
2	Jan. 31	<b>Running code from the command line</b> Text editors, shells, command line interpretation	Python Hello
3	Feb. 7	<b>Practicing good programming habits</b> Pair programming, debugging, commenting	Python Refresher Challenges
4	Feb. 14	<b>Organizing and testing your code</b> Version control (git/GitHub), unit testing	One Time Pad Cipher
5	Feb. 21	<b>Integrating libraries and reading docs</b> Using packages, parsing documentation	Cipher Repository
6	Feb. 28	<b>Thinking like an advanced programmer</b> Hashes, classes, encapsulation, imperative vs. declarative, functional vs. object-oriented	Visual Cipher Interface
7	Mar. 7	<b>Translating between languages</b> Python to Ruby, reviewing: simple types, control flow, objects, functions, recursion	Ruby Hello
8	Mar. 14	[Spring Recess]	
9	Mar. 21	<b>Specing a project</b> Planning a solution, choosing a language, documentation redux	Ruby Training Ruby Challenges
10	Mar. 28	<b>Utilizing a framework</b> Model-View-Controller, Django vs. Rails, HTML/CSS tour	Ruby Game
11	Apr. 4	<b>Storing and retrieving data</b> CSV, SQLite vs. MySQL, XML vs. JSON	Project Plan Rails Training
12	Apr. 11	<b>Mixing multiple languages</b> Interpretation vs. compilation, scripting vs. stand-alone, front-end vs. back-end	Project Progress Report JavaScript Training
13	Apr. 18	<b>Developing (mobile) apps</b> Native OOP IDEs, Java tour, Eclipse, Android vs. iPhone	Project Prototype
14	Apr. 25	<b>Demoing your work!</b>	Final Project

## Communication

All online communication for this course will take place **via Discord** (a text, voice, and video chat service popular with gamers, live streamers, and programmers). If you do not already have an account, please create one. **Join our server** using the invitation, then follow the instructions in the pinned message in #welcome to set your nickname and pronouns.

CSC151-S22 Discord Server Invitation

<https://discord.gg/fgPEcA2FsG>

- #announcements: Important notices about assignments, class times, deadlines, etc.
- #general: Discussion about course material, programming problems, off-topic ideas, etc.
- #questions: If you are wondering something, chances are someone else is puzzled too. Post any non-personal questions you have here. Please utilize threads when responding.
- DMs: Message me directly for matters that require individual communication.

I will try to answer time-sensitive questions within one workday, but please turn to your peers and TAs for help first. Chances are they will assist you more quickly. Sometimes I miss DMs, so don't be shy about pinging me again if you're waiting on a reply. Lastly, please note that I'm terrible at responding to email. I'll read it, but you'll either get a reply right away, or between two days and two years later.

## Office Hours

Office hours are a time when you can **ask me questions about... anything!** Weekly hours are for any student who would like to chat with me and I hold them on a rotating schedule. To see upcoming office hours and ensure you get a slot, please **book a time via Calendly**. If you need a different time you are welcome to DM me. You can visit my office/lab in person or **remotely on Gather** depending on the operating mode of the college. Please specify your preference when reserving a meeting spot.

Reserve Time via Calendly

<https://calendly.com/johannabrewer>

Virtual Meetings on Gather

<https://gather.town/app/NfY57eEoJJb22wzP/InclusiveDesignLab>

## Grading

In keeping with how computer programs are typically evaluated, most submissions are graded on a **simple scale**: needs improvement (C); meets expectations (B); exceeds expectations (B+/A-); distinguished (A/A+). Through regular reflections on your efforts you will have an opportunity to **review your own performance** and give input on your final letter grade. Assessments in this course are weighted to reflect the overall workload.

- 50% Assignments
- 25% Final project
- 25% Class participation

Your success in this class will depend on your **active engagement** with both the material and your classmates because fluency in code comes from speaking to other programmers. To do well, you must demonstrate that you are working to build **good programming habits** and to embrace learning through **methodical experimentation**.

### **Academic Integrity**

As programmers, we all build on the code of those who came before us, and as honorable scholars, we credit their contributions. Whenever you work with others, either as study partners or as project teammates, you must **acknowledge your collaborators**. Likewise, I expect you to always **cite all sources** used when coding your assignments. This includes not only reference readings but also blog posts, videos, StackOverflow pages, etc.

### **Participation & Absences**

Though formal attendance will not be taken, you won't be able to participate in class if you are not there. We only meet thirteen times so **your presence in each class matters**. If you know you will have a planned absence, please let me know two days in advance; and if you have an emergency, please inform me after you are safe.

### **Extensions & Lateness**

It is important you complete your **work in a timely fashion**. Homework is due by midnight on Sundays. If you require additional time to complete your individual assignments, DM me to request it, **late is better than never**. Extensions on team project assignments will only be given in exceptional cases where a member's Dean provides a written request.

### **Comfy Class Policies**

Laptops and phones can be distracting, but they are important tools for us. Please avoid using your devices in class for purposes other than coursework. Hydration is essential so you are welcome to bring beverages, but you must use **closed containers** to avoid spills. We will have two breaks during which you can have a snack, but while we are still masking let's **refrain from eating** during class.

### **Fostering Respect & Inclusion**

During this course we will engage in a variety of discussions, activities, and projects that rely on your ability to work together. So that we can build our sense of community, please, make sure you change your Discord nickname to your preferred first name and set your pronouns in our channel. When communicating with one another, whether in class or online, I expect you to practice **active listening**. When someone is talking, you should be focused on understanding what they are expressing rather than thinking of how you will respond. Additionally, I ask you to remember that we all come from different backgrounds that shape our unique perspectives, and so we ought to **respect one another** when we have sincere differences of opinions.

### **Diversity Statement & Equity Commitment**

As a mixed-race, Native, non-binary, neurodivergent person who was the first in their family to earn a doctoral degree, I have stake in bettering, and a first-hand knowledge regarding, the experience of marginalized folks in our society. I know that a welcoming learning environment can have a real impact, and so I am committed to making this **classroom a comfortable place** for all my students. Please let me know if you ever have thoughts, questions, or concerns about ensuring that we **treat one another equitably**.

### **Accessibility & Accommodations**

Learning and teaching with masks on is a challenge for all. You are welcome to use a live captioning app on your mobile device if it increases your ability to understand when others speak. Course materials including readings, slides, and lecture notes will be provided as PDFs that are screen reader compatible. If you have any issues accessing the materials, let me know as soon as possible and I will work to find a solution. Should you encounter barriers to participation in this or any other course, please reach out to Laura Rauscher, **Director of Disability Services, by calling (413) 585-2071** to make an appointment to discuss support and accommodations.

### **Health Resources**

College can be stressful, even more so in the midst of a pandemic, but you are not alone. Please reach out for help if you are feeling unwell or overwhelmed. The Schacht Center on campus provides a variety of **free & confidential** health and counseling services. You can email [healthservices@smith.edu](mailto:healthservices@smith.edu) or call (413) 585-2250 for any medical concerns. To set up an appointment for mental health support you can email [counselingservices@smith.edu](mailto:counselingservices@smith.edu) or **call (413) 585-2840 if you are in crisis**.

### **Acknowledgments**

Some of the materials used in this course are derived from previous classes at Smith, as well as similar courses taught at other institutions. Thanks to my academic colleagues, especially Nicholas Howe and Joseph O'Rourke, for sharing their syllabi.