

# CS211: Fundamentals of Computer Programming II

## Syllabus - Winter 2022

### Course Staff

#### Instructors

<a href="#">Branden Ghena</a>	branden@northwestern.edu
<a href="#">Sruti Bhagavatula</a>	srutib@northwestern.edu

#### TAs

<a href="#">Xiangmin (Sherwin) Shen</a>	xiangminshen2019@u.northwestern.edu
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#### PMs

Nick Baird	nickbaird2024@u.northwestern.edu
Eli Barlow	elibarlow2024@u.northwestern.edu
Naythen Farr	naythenfarr2022@u.northwestern.edu
Brian Gleason	briangleason2023@u.northwestern.edu
AJ Hesby	a.j.hesby2024@u.northwestern.edu
Mirage Modi	miragemodi2022@u.northwestern.edu
<a href="#">Dilan Nair</a>	dilannair2024@u.northwestern.edu
Alexander Redding	alexanderredding2022@u.northwestern.edu
Antonio Rocha	antoniorocha2023@u.northwestern.edu
John Sanchez	johnsanchez2024@u.northwestern.edu
Danche Smilkova	danchesmilkova2023@u.northwestern.edu
<a href="#">Chris Song</a>	chrissong2023@u.northwestern.edu

## Overview

CS 211 teaches foundational software design skills at a small-to-medium scale. We aim to provide a bridge from the student-oriented *How to Design Programs* languages to real, industry-standard languages and tools. In the first half of the course, you'll learn the basics of imperative programming and manual memory management using the C programming language. In the second half of the course, we'll transition to C++, which provides abstraction mechanisms such as classes and templates that we use to express our design ideas. Topics include expressions, statements, types, functions, branches and iteration, user-defined types, data hiding, basic UNIX shell usage, and testing.

## Location and Time

Lecture time: 2:00 - 3:20 PM Central, Tuesdays and Thursdays

Location: [LR2](#) (L171), Tech Hall

Class will start online per Northwestern regulations, but will return to in-person as soon as possible. We will attempt to record all lecture sessions so that you can later review them if you want, but the expectation is that students will attend class.

## Pre-requisites

CS111 or CS150.

Undergraduate students who have credit for CS150 (through AP, for example) are expected to either take CS111 first, or at least take CS111 concurrently with CS211.

## Communication

All course materials will be posted to Canvas including grades, lecture materials, and class recordings. Campuswire will be used for course discussions and questions. **All questions should go to Campuswire rather than to email.** We will enroll you in Campuswire. Office hours will also be available, with the regular schedule available on Canvas. Office hour appointments can also be made with the instructors or TA by Campuswire post to "instructors and TAs".

## **Class Structure**

### **Homework**

There will be six weekly homework assignments. The homework will be most of your effort this quarter and is there to allow you to apply the information you've learned in lecture. They will include a writeup about the project as well as starter code. The writeup will include details about submitting the code and the deadline for the assignment. Some homeworks will be partner assignments and some will be individual. Slip days are available to modify the deadlines of homeworks, as described below.

### **Labs**

There will be several labs. These are short practice examples to help you learn new programming languages and environments. Each lab will have a short multiple-choice assessment associated with it. There will likely be five labs total, but we might add or remove some as needed.

### **Quizzes**

There will be four quizzes throughout the quarter. These are meant as lower-stakes assessments of your understanding in lieu of exams. Quizzes will be cumulative, but will focus on material from the last two weeks. You will be told in advance when the quiz will be and how to complete it (in person or online).

### **Final Project**

The final project will be a continuation of the homeworks into your opportunity to build something that's simultaneously more complex but also more interesting. Students will implement a game, or other piece of interactive software, or their choosing. The final project will include a proposal, a specification, code, and finally an evaluation guide. More details will be provided to students during the quarter.

### **Schedule**

The course schedule is available on the Canvas homepage for the course. Be aware that it is subject to change, although warnings will be given to students for any major changes.

## Grades

Percentage grades will be converted to letter grades using the standard letter grade system (93% A, 90% A-, 87% B+, etc.). However, these grade bins may be moved at the instructors' discretion for the advantage of students. Note that the percent grade displayed by Canvas is not always accurate and may not take late penalties or slip days into account, as described below.

Each category of assignment has a total value, which is divided evenly between assignments.

Category	Count	Total Value
Homework	6	60%
Labs	5 (likely)	5%
Quizzes	4	10%
Final project	1	25%

## Late Policy

Quizzes and labs may not be submitted late.

Homework assignments may be submitted late at a penalty of 10% reduction in maximum points per day late. For example, a homework assignment submitted two days late has a maximum score of 80%. Lateness is rounded up to the whole day, so an assignment that is five minutes late has the same penalty as an assignment 23 hours late.

The Final Project may be submitted late for up to 90% of the maximum points after one day, 60% of the maximum points after two days, 30% of the maximum points after three days, and zero points after that. Note that slip days (as described below) may NOT be applied to the final project.

## Homework Slip Days

To help you more flexibly manage deadlines, we will give you **three slip days**, which allow you to submit a homework assignment late without penalty. Slip days are used in units of whole days, meaning a homework submitted five minutes late consumes an entire slip day. Slip days may only be applied to homework assignments, not quizzes, labs, or the final project.

You do not need to notify staff that you are using a slip day. We will track the total number of late days for your submissions and automatically apply slip days to optimize their usage. Slip days will not be assessed against homework assignments you did not submit. No extra credit is awarded for avoiding the use of slip days. However, it is in your best interest to avoid turning in homework assignments late, as the next homework assignment is often released slightly afterwards.

Slip days are applied individually, so for partner assignments be careful to communicate about plans to use slip days. It is possible for an assignment submitted one day late to have no penalty for one student (due to spending a slip day) and a one day late penalty for their partner with no slip days remaining.

Example slip day usage:

- Use two slip days to receive no penalty on a homework submitted two days late.
- Use two slip days to receive no penalty on two separate homework assignments each submitted one day late.
- Use three slip days to receive just a one-day late penalty on a homework submitted four days late.

Slip days are meant to automatically handle minor issues. If you are having a major issue, please contact the instructors as soon as possible, and we will work together on a solution. Particularly for issues outside of the student's control, such as major injury or sickness, deadlines can be shifted without penalty if you contact the instructors.

## Academic Integrity

Students in this course are required to comply with the policies found in the booklet, "Academic Integrity at Northwestern University: A Basic Guide". All papers submitted for credit in this course must be submitted electronically unless otherwise instructed by the professor. Your written work may be tested for plagiarized content. For details regarding academic integrity at Northwestern or to download the guide, visit:

<https://www.northwestern.edu/provost/policies/academic-integrity/index.html>

## Collaboration

For the purposes of this policy, we define **three levels of collaboration**:

- **Partner collaboration** means your code and the other student's code are identical because you share it and work on it together.
- **Close collaboration** means you communicate about code however you see fit.
- **Arms-length collaboration** means you discuss problems and solutions at a high level only, and you cite your sources.

When collaborating at arms length:

- you MAY NOT read, write, look at, record, or in any way transcribe the code in question;
- you MAY NOT have the code on your screen when doing it; and
- you MUST cite any collaborators whose ideas affected your work. A citation is a comment in your code that tells us:
  - who you discussed the code with and
  - what effect the discussion had on your code

You are always free to:

- Seek help from any member of the course staff on an assignment or lab,
- Closely collaborate with other current CS 211 students on a lab, and
- Arms-length collaborate with other current CS 211 students on an assignment, provided you cite their contributions to your work

For some assignments you will have an opportunity to register a homework partner (via instructions we will provide you). When you have a registered partner, you and your partner are jointly responsible for writing one shared copy of the assignment, which you submit together. When you do not have a registered partner, you must write your own code by yourself.

No other collaboration on assignments is permitted. In particular, you may not collaborate closely with, share code with, nor receive code from anyone other than your registered partner (or the course staff) on any assignment.

You may not share your assignment online for others to view it. Particularly, this means that you may not post assignment code publicly on Github or other code-sharing websites.

In summary:

<b>Collaboration Level</b>	<b>Labs</b>	<b>Solo Homeworks</b>	<b>Partner Homeworks and Final Project</b>
<b>Partner</b>	Yes	No	Yes
<b>Close</b>	Yes	No	No
<b>Arms-Length</b>	Yes	Yes, must cite	Yes, must cite

What about outside sources? You are always free to:

- use the Campuswire discussion board to ask questions regarding assignments, so long as your questions (and answers) don't show the solution publicly, and
- consult the references listed in the syllabus or the assignment.

You may use non-reference online resources such as *Stack Overflow*, **provided you cite their contributions to your work, including a link.**

## **Cheating**

Cheating is when you:

- engage in an inappropriate level of collaboration (e.g. looking at another student's homework code, unless you are registered partners)
- enable another student, *present or future*, to cheat (e.g. letting a CS211 student read your code next year)
- fail to cite your sources (friend, Stack Overflow, etc.) (e.g. you get a big hint but don't acknowledge where it came from in a code comment)

If you are unclear on any of these policies, or if you are in doubt about a particular situation, please ask a member of the course staff. Students who violate these policies will be reported to the appropriate dean.

## Accessibility

Northwestern University is committed to providing the most accessible learning environment as possible for students with disabilities. Should you anticipate or experience disability-related barriers, please contact AccessibleNU to move forward with the university's established accommodation process ([accessiblenu@northwestern.edu](mailto:accessiblenu@northwestern.edu); 847-467-5530). If you already have established accommodations with AccessibleNU, please let me know as soon as possible, preferably within the first two weeks of the term, so we can work together to implement your disability accommodations. Disability information, including academic accommodations, is confidential under the Family Educational Rights and Privacy Act.

Should you need them, additional campus resources are available, including, but not limited to:

- Accessible NU: [www.northwestern.edu/accessiblenu/](http://www.northwestern.edu/accessiblenu/)
- CAPS: [www.northwestern.edu/counseling/index.html](http://www.northwestern.edu/counseling/index.html)
- Student Enrichment Services: [www.northwestern.edu/enrichment/](http://www.northwestern.edu/enrichment/)

I believe in providing reasonable accommodations that allow for full access to learning for all. Please contact me if there is anything that we should be aware of that might have an impact on your participation in this course (documented disability, language challenges, absences for religious observations, etc.).

## Diversity and Inclusion

I consider this classroom to be a place where you will be treated with respect, and we welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability—and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

This course will also include a mix of undergraduates and graduate students with differing backgrounds in programming. Do not feel discouraged by this. Each student will bring a different aspect of their knowledge to discussions, and we'll all be contributing towards increasing each other's understanding of computer science fundamentals.

## Support for Wellness and Mental Health

Northwestern University is committed to supporting the wellness of our students. Student Affairs has multiple resources to support student wellness and mental health. If you are feeling distressed or overwhelmed, please reach out for help. Students can access confidential resources through the Counseling and Psychological Services (CAPS), Religious and Spiritual Life (RSL) and the Center for Awareness, Response and Education (CARE). Additional information on all of the resources mentioned above can be found here:

- <https://www.northwestern.edu/counseling/>
- <https://www.northwestern.edu/religious-life/>
- <https://www.northwestern.edu/care/>



## COVID-19 Compliance

Students, faculty, and staff must comply with University expectations regarding appropriate classroom behavior, including those outlined below and in the COVID-19 Code of Conduct. With respect to classroom procedures, this includes:

- Policies regarding masking and social distancing evolve as the public health situation changes. Students are responsible for understanding and complying with current masking, testing, Symptom Tracking, and social distancing requirements.
- In some classes, masking and/or social distancing may be required as a result of an Americans with Disabilities Act (ADA) accommodation for the instructor or a student in the class even when not generally required on campus. In such cases, the instructor will notify the class.
- No food is allowed inside classrooms. Drinks are permitted, but please keep your face covering on and use a straw.
- Faculty may assign seats in some classes to help facilitate contact tracing in the event that a student tests positive for COVID-19. Students must sit in their assigned seats.

If a student fails to comply with the [COVID-19 Code of Conduct](#) or other University expectations related to COVID-19, the instructor may ask the student to leave the class. The instructor is asked to report the incident to the Office of Community Standards for additional follow-up.

To protect the health of our community, Northwestern University requires unvaccinated students who are in on-campus programs to be tested for COVID-19 twice per week.

Students who fail to comply with current or future COVID-19 testing protocols will be referred to the Office of Community standards to face disciplinary action, including escalation up to restriction from campus and suspension.

Some (hopefully most) class sessions for this course will occur in person. Individual students will not be granted permission to attend remotely except as the result of an Americans with Disabilities Act (ADA) accommodation as determined by AccessibleNU.

Maintaining the health of the community remains our priority. If you are experiencing any symptoms of COVID do not attend class and update your Symptom Tracker application right away to connect with Northwestern's Case Management Team for guidance on next steps. Also contact the instructor as soon as possible to arrange to complete coursework.

Students who experience a personal emergency should contact the instructor as soon as possible to arrange to complete coursework.

Should public health recommendations prevent in person class from being held on a given day, the instructor or the university will notify students.

## **Class Recordings**

This class or portions of this class will be recorded by the instructor for educational purpose and available to the class during the quarter. Your instructor will communicate how you can access the recordings. Portions of the course that contain images, questions or commentary/discussion by students will be edited out of any recordings that are saved beyond the current term.

Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology as an accommodation should contact [AccessibleNU](#). Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University's [Copyright Policy](#), faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.