

211 Syllabus

April 18, 2024

This course is about computing, programming, and how they go together. Its major goal is to introduce students to the principles of systematic problem solving through programming and the basic rules of computation.

The course does not assume any prior programming experience. It is therefore suitable for all students—majors and non-majors alike—who want to learn more about computing and programming. We will assume basic familiarity with arithmetic and algebra, and the course requires curiosity, self-discipline, and willingness to work with others for everyone.

Prerequisites: This course has no official university prerequisites, just high school precalculus math.

1 People and communication

Welcome to computer science at Indiana University! We are the course staff of C211:

Name	Email	Position
Chung-chieh Shan	ccshan@iu.edu	Lecturer
Tulip Amalie	hrlevi@iu.edu	Undergraduate Instructor
Eva Augur	evaaugur@iu.edu	Undergraduate Instructor
Salim Belhaj	sbelhaj@iu.edu	Undergraduate Instructor
Dhruv Chavan	dvchavan@iu.edu	Undergraduate Instructor
Siddharth Ghantasala	sghantas@iu.edu	Undergraduate Instructor
Harmony Palmer	wirpalm@iu.edu	Undergraduate Instructor
Niyati Ramanathan	nramanat@iu.edu	Undergraduate Instructor
Sujin Woo	woosuj@iu.edu	Undergraduate Instructor

Use Indiana University email (@iu.edu) to reach any of the course staff. Addresses are given in the table above.

Check your Indiana University email (@iu.edu) daily. We sometimes send you private messages there.

The primary way we post information about this course is on this Web site here. We use Canvas only to record your grades. We also use a shared folder on Google Drive to return your homework with personal feedback, which you should review.

We have set up a course discussion forum using Discord. We will also make course announcements there. You must read the announcements and participate in the discussion. Sign up with the link

we announced on Canvas when the course started. Change your nickname on Discord to the full name you'd like us to use in this class. Then, introduce yourself in the #introductions channel.

If you would like to talk to only instructors on Discord, type /breakout (with a forward slash at the beginning of the message) then hit Enter. This should create a “breakout channel” that only you and the staff can see.

Two safety tips on Discord (actually, on any network): First, enable two-factor authentication (next to your password setting). Second, don't open any download you receive through a private message.

2 Assignments and meetings

This course requires you to do four kinds of assignments. For each kind of assignment, there is a corresponding kind of meeting designed to help you.

2.1 Lectures

Lectures are on Monday & Wednesday at 9:45–11:00am in BH 104. Your attendance in person is required. However, if you cannot attend (for example, if you are sick), contact your professor as soon as possible to find out how you should do the work so that your skills stay on track with this course.

To prepare you for each lecture, we will post videos and exercises on this Web site—under “Lectures” always, and under “Readings” sometimes. Watch the videos and submit the exercises by midnight on Tuesday and Sunday before each lecture (except the very first lecture, and right after the midterms). We will grade your work quickly to confirm that you are keeping up.

If midnight rolls around and you're not done yet with some lecture exercises, keep working on them and reviewing the videos. See “Ordering” below.

2.2 Labs

There are 3 lab sections. Each lab section has 1 lab per week:

Letter	C211	A591	Time	Place	Instructors
A	5342	5340	Thursday 1:50–3:45pm	IF 0006	Tulip Amalie <hrlevi>, Dhruv Chavan <dvchavan>, Harmony Palmer <wirpalm>
B	5343	4353	Thursday 4:10–6:05pm	BH 308	Eva Augur <evaaugur>, Salim Belhaj <sbelhaj>, Siddharth Ghantasala <sghantas>
C	8600	1718	Friday 10:20am–12:15pm	IF 0119	Niyati Ramanathan <nramanat>, Sujin Woo <woosuj>

Your attendance in person is required. However, if you cannot attend (for example, if you are sick), contact your lab instructors as soon as possible to find out how you should do the work so that your skills stay on track with this course.

We will post the instructions for each lab on this Web site under “Labs”. You don’t need to read those instructions before you show up to lab, but you can if you want. We will grade your work at the end of the lab session to give you friendly feedback. The lab grade also includes a quiz, staying on task, and working with partners.

2.3 Problem sets

There will usually be a problem set due every Wednesday by midnight. We will post the instructions for each problem set on this Web site under “Problem sets”. We will grade your work in a week to evaluate your learning and give you feedback.

Before you tackle each problem set, first make sure you have finished the preceding lecture exercises. See “Ordering” below.

To help you with problem sets and answer any questions, the instructors will conduct “Tutoring”, both in person and online. Your attendance of tutoring is optional but highly recommended. You can come to tutoring and hang out even if you don’t have a specific question but just want to study!

2.4 Exams

There will be two midterm exams and one final exam.

The first midterm will be on Tuesday, February 6, at 7:00–9:30pm, in LH 102.

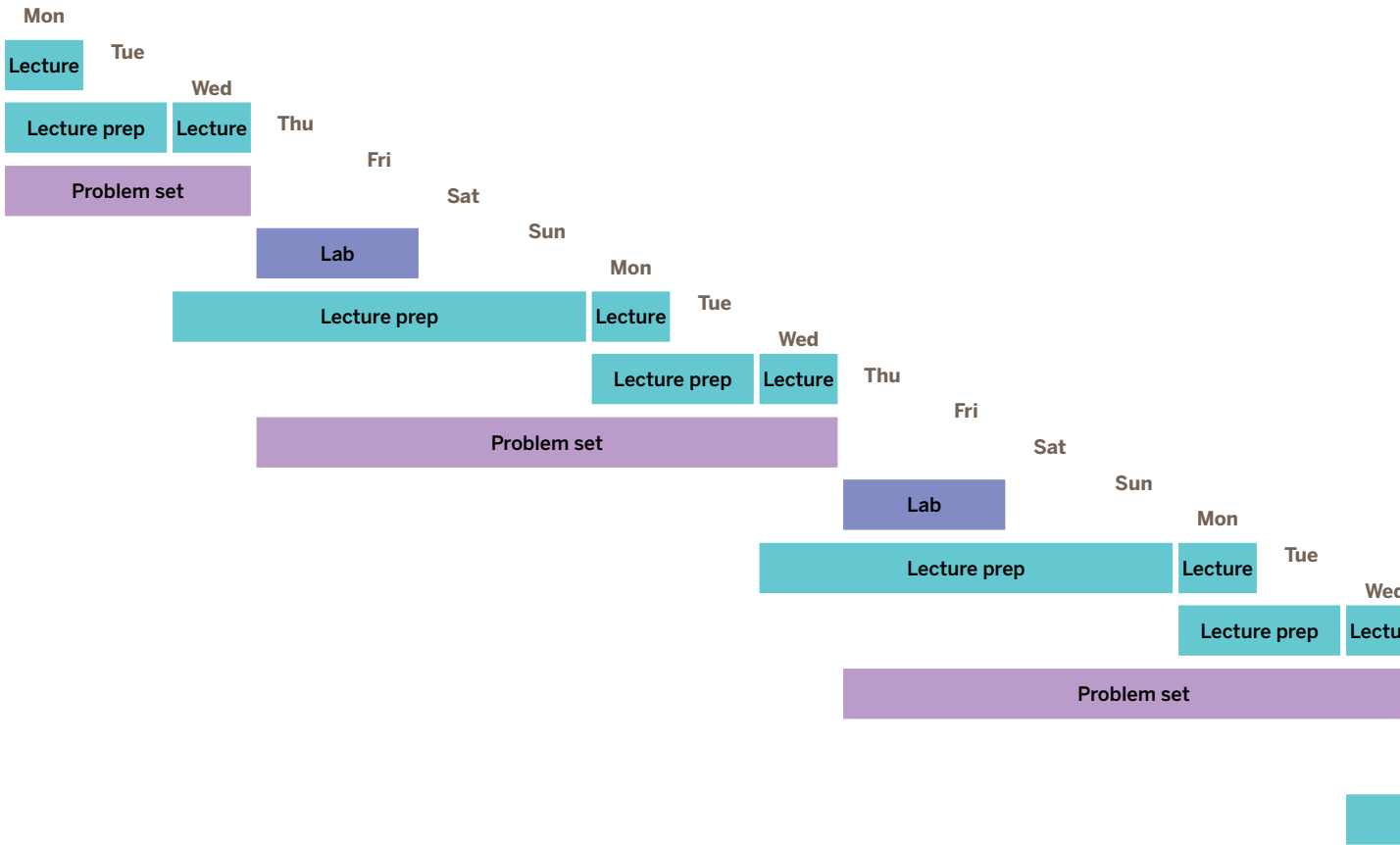
The second midterm will be on Tuesday, March 19, at 7:00–9:30pm, in LU 1001.

The final exam will follow the campus-wide schedule: it will be on Wednesday, May 1, at 8:00–10:00am (**not 9:45am**), in BH 104.

We will provide more information to help you to study as each exam approaches. **To accommodate exam schedule conflicts and disabilities, please contact us as soon as possible.**

2.5 Weekly rhythm

The following diagram shows how you should study on each day of a typical week.

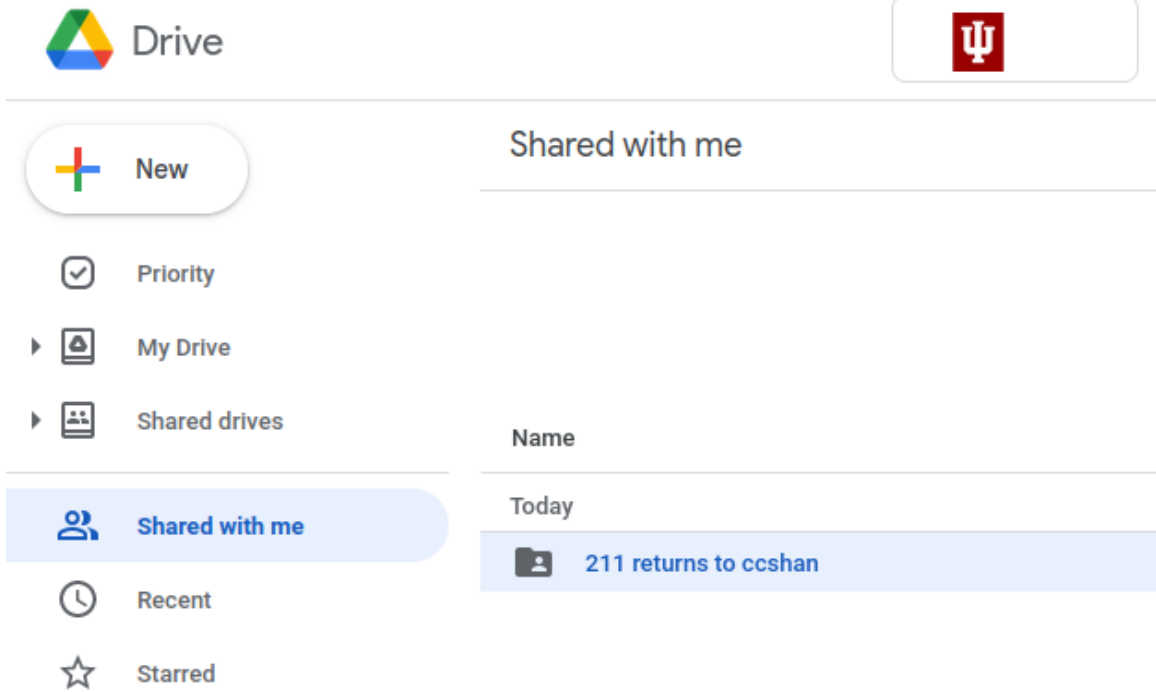


Posted assignments are listed by due date in the “Due dates” section of this Web site.

2.6 Submitting and returning homework

You must use the Handin system to submit lecture exercises and problem sets. The second lecture shows you how to set up and use Handin. Your homework is only accepted if you submit it in time to the correct destination, and if the message “Handin successful” appears. We encourage you to submit your work as early and often as possible; you can resubmit as many times as you want up until the due date.

We will post your numeric grades on Canvas. More importantly, we will return your homework with personal feedback in a shared Google Drive folder, which you should review:



We do not accept late homework submissions. But if you submitted something for a problem set, see “Corrections” below on correcting it.

Corrections

If you receive a grade less than 9/10 on a problem set, you can raise your grade up to 9 by correcting your work and presenting it to one of us during tutoring or other scheduled appointment. Present your correction during the two weeks following the week in which your graded problem set becomes available back to you. We will ask you to explain your work.

We encourage you to get help from us as you prepare your correction. Partial corrections are welcome, and if you present your partial correction to us, we will give you additional time to finish your correction.

Exceptions: **Grades of 0 cannot be corrected, except for the first problem set.** A grade of 9 or above cannot be promoted to a higher grade. The last problem set cannot be corrected. The second-to-last problem set can only be corrected for one week.

2.7 Getting and giving help

Tutoring is a great way to get help. Hours are listed on a separate page. Tutoring begins with the second week of classes, so there won't be tutoring during the first week of classes. There also won't be tutoring on the Wednesday after each midterm, and during final exam week.

Even when we don't have tutoring scheduled, you can come to Luddy 0121 or Discord to talk with the other students (without sharing solutions).

Getting help online

We encourage you to look for help and to help others on Discord, but you are not allowed to post or share homework code there. If you would like an instructor to look at your code, don't post it in a public channel, but first type `/breakout` (with a forward slash at the beginning of the message) then hit Enter. This should create a "breakout channel" that only you and the staff can see. You can post your code and concern there. If that doesn't work, send the staff an email or a DM (direct message: right-click on their name and choose "Message").

2.8 Grading

Your grade in this class will be determined by the following:

- **Online lecture exercises (10%).** These exercises are automatically graded, and due by midnight before each corresponding in-person lecture.
- **Reading exercises (5%).** These exercises foster discussion, and are also due by midnight before a corresponding in-person lecture.
- **In-person lectures and participation (10%).** This is considered broadly, including helping and being helped by others in person and on Discord. This grade is not just for attendance, so it might be increased if you are extra helpful, or decreased if you are extra unhelpful.
- **Labs (10%).** This includes your lab submission and your engagement in the lab activity. Helping and being helped by others is an essential part of computer science and of each lab.
- **Weekly problem sets (30%).** C211 students get full credit for finishing at least 80% of each problem set, but are encouraged to complete all problem sets.
- **Exams (35%).** The three exams are weighted roughly equally. However, to encourage you to persevere in the course, we will *replace a portion* of your first midterm grade by your second midterm grade or your final exam grade (whichever is higher). Similarly, we will *replace a portion* of your second midterm grade by your final exam grade (if higher).

How big a portion will we replace? It is proportional to your grade for in-person lectures and participation (see item above). For instance, if your semester grade for in-person lectures and participation is full, then we will replace your first midterm grade *entirely* by your highest exam grade, and we will replace your second midterm grade *entirely* by your final exam grade if higher. In contrast, if your semester grade for in-person lectures and participation is half, then we will *average* your first midterm grade with your highest exam grade, and we will *average* your second midterm grade with your final exam grade if higher.

Final letter grade in the class will be determined as follows. Everyone who gets at least 90% will get some form of A, everyone with at least 80% will get at least some form of B, and everyone with at least 70% will get at least some form of C. If you have questions about your grade, please see your instructor.

Ordering

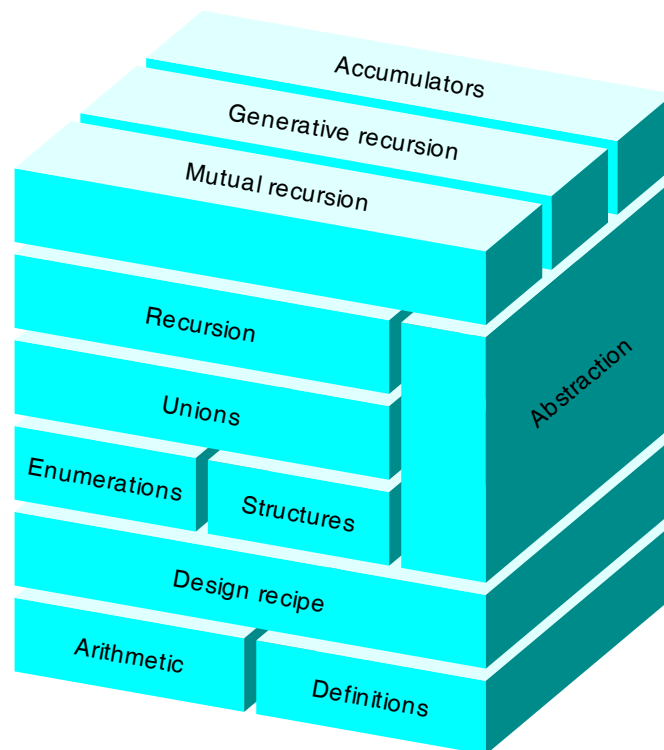
The assignments of this course build on each other: to solve harder problems, you first have to solve easier ones. In particular, you should master lecture and lab exercises before tackling problem sets. To encourage you to build up your skills in this order, we will cap your grade on each problem set by your grade on the relevant lectures at the time you submit the problem set (or correct it—see “Corrections” above). The relevant lectures are listed at the top of the problem set. You can resubmit them at any time.

For example, Problem set 3 lists Lectures 2–4 at the top. If your average grade on Lectures 2–4 is 50% when you submit the problem set, then your grade on the problem set cannot exceed 50%. To lift this cap, you should first redo Lectures 2–4 to perfection, then submit the problem set (before the due date of the problem set) or correct the problem set (before the correction deadline of the problem set).

3 Contents

3.1 Topics covered

The topics of this course build on each other, so to understand later topics, it is crucial that you first master earlier ones.



A great way to study is to do from scratch the exercises we provide in lectures, labs, and problem sets, rather than merely reading or watching. This practice is important whether you are encountering a topic for the first time or reviewing it; the course staff is happy to answer questions not just about current homework but also about past homework. To help you find the material relevant to a topic, here is a list of topics and where they are taught in this course:

- **Arithmetic:** lecture 1, lab 1, problem set 1
- **Definitions:** lecture 2, lab 1, problem set 2
- **Design recipe:** lectures 3–5, labs 2 and 9, problem set 3
- **Enumerations:** lectures 6–7, lab 3, problem set 4
- **Structures:** lectures 8–9, lab 4, problem set 5
- **Unions:** lectures 10–11, lab 5, problem set 6
- **Recursion:** lectures 12–15 and 19, labs 6–7, problem sets 6–7
- **Abstraction:** lectures 16–19, labs 8–9, problem sets 8–9
- **Mutual recursion:** lecture 20, lab 10, problem set 10
- **Generative recursion:** lectures 22–24 and 26, labs 11–12, problem set 11
- **Accumulators:** lectures 25 and 27, lab 13, problem set 12

3.2 Readings

Our textbook is *How to Design Programs, Second Edition* by Felleisen, Findler, Flatt, and Krishnamurthi. It is available in print and freely online.

This course will also require you to read and discuss papers (and a talk) about computer science:

- Who can name the bigger number? by Aaronson
- Computing machinery and intelligence by Turing
- Understanding the limitations of AI: when algorithms fail by Gebru
- Software aspects of strategic defense systems by Parnas
- Hacking the cis-tem: transgender citizens and the early digital state by Hicks
- All smart contracts are ambiguous by Grimmelmann
- The Therac-25: 30 years later by Leveson

We will discuss and analyze these readings using Hypothesis, a service that lets us talk to each other as we read.

3.3 Computing environment

We will use DrRacket version 8.9 or 8.10 or 8.11 (not 8.2 or 8.3), a programming environment for a family of programming languages. We will stick to DrRacket’s student languages plus a small number of libraries.

DrRacket is freely available on the Web for you to install on your own computer. It runs on most popular platforms (Windows, Mac OS X, Linux, and other *nixes). Programs behave similarly

on all platforms, so you do not need to worry what kind of machine you use when you run your programs.

Computer lab availability

We urge you to download DrRacket to your own computer so that you can work wherever, whenever you like. But DrRacket is installed on the school computers if you need to use them.

4 Courses shared with C211

CSCI-A591

For graduate students enrolled in A591, the course will be identical to C211.

5 Policies

5.1 Cell phones

Research has shown us that even having our cell phones on the table in front of us diminishes our ability to learn well. Checking texts, emails, and messages is also unprofessional and disrespectful to our class community. Please silence and store your phones during class. We will do so as well.

5.2 Academic integrity



© Sarah Andersen

Like with a musical instrument or a sport, practice is the only way to learn the material in this course, and it can only be done by yourself. That is why we will strictly enforce the university's academic integrity policy.

All homework assignments must be completed strictly by you. You are free to discuss an assignment with other people, so long as you acknowledge them by name in a comment in the homework you submit. However, *you may not share code in any way*, whether by voice, by writing, by print, by phone, by computer, or by any other way. Sharing code violates the University's Code. Violations of academic integrity will be reported to the Office of Student Conduct and will hurt your grade.

One way to avoid sharing code is for each person who talked to erase everything afterwards. Then, each person who talked should do something unrelated to this course for 30 minutes, such as taking a walk or watching a show. Finally, each person who talked should redo the assignment from scratch without talking to anyone. This is not the only way to avoid sharing code.

It is academic misconduct both to receive shared code and to send shared code. Therefore, it is academic misconduct to submit any code received from outside the course Web site. Similarly, it is academic misconduct both to ask someone else to submit work in your name and to submit work in someone else's name, no matter whether that work is an exam, a lab, a quiz, a problem set submission or correction, an online lecture exercise, a lecture worksheet, signing in at a lecture, a Canvas or Discord message, a Hypothesis annotation or reply, a conversation with course staff, or any other work.

Similarly, online code generating tools like ChatGPT or GitHub Copilot should be treated just like another person. Submitting code written by them is academic misconduct, just as for code written by another person. As with other people, asking questions of a service like ChatGPT is allowed, but you can't share code. If you copy code from ChatGPT and paste it into DrRacket, that is almost certainly academic misconduct.

We don't want this policy to stop you from getting and giving help. If you're not sure whether it is ok to share something in public, just ask first! You can always talk to any instructor (listed under "People" above), and you don't need to acknowledge them by name in the homework you submit. You can share code with any instructor, whether by voice, by writing, by print, by phone, by computer, or by any other way. In particular, to share anything with instructors on Discord, you can first type `/breakout` (with a forward slash at the beginning of the message) then hit Enter. This should create a "breakout channel" that only you and the staff can see. You can post your code and concern there. If that doesn't work, send the staff an email or a DM (direct message: right-click on their name and choose "Message").

5.3 Sexual misconduct

One of our responsibilities is to help create a safe learning environment on our campus. Title IX and our own Sexual Misconduct policy prohibit sexual misconduct in any form, including sexual harassment, sexual assault, stalking, sexual exploitation, and dating and domestic violence. If you have experienced sexual misconduct, or know someone who has, the University can help. Visit <http://stopsexualviolence.iu.edu/> to learn more. If you are seeking help and would like to speak to someone confidentially, you can make an appointment with the IU Sexual Assault Crisis Services at (812) 855-8900, or contact a Confidential Victim Advocate at (812) 856-2469 or cva@indiana.edu.

It is also important that you know that federal regulations and University policy require the professors to promptly convey any information about potential sexual misconduct known to us to our Deputy Title IX Coordinator or IU's Title IX Coordinator. In that event, those individuals will work to ensure that appropriate measures are taken and resources are made available. Protecting student privacy is of utmost concern, and information will only be shared with those that need to

know to ensure the University can respond and assist.

I have read this syllabus thoroughly.

Name: _____ Date: _____