CAS CS 111: Introduction to Computer Science I

Boston University, Fall 2026

Syllabus

Description: The first course for computer science majors and anyone seeking a rigorous introduction. Develops computational problem-solving skills by programming in the Python language, and exposes students to a variety of other topics from computer science and its applications. This course fulfills a single unit in each of the following BU Hub areas: Quantitative Reasoning II, Creativity/Innovation, Critical Thinking. ***No prerequisites.***

Important: CS 111 is a time-consuming and demanding course that is primarily intended for students who plan to take more advanced computer science courses. **You should *not* take the course if you have other major time commitments, and you should *not* take it primarily for the purpose of fulfilling Hub areas.** Other options include CS 103, CS 105, CS 108 and DS 100.

Lectures and Labs

lectures: section A1: MWF, 10:10-11:00 am, SCI 113
section A2: MWF, 1:25-2:15 pm, HAR 105
section A4: MWF, 2:30-3:20 pm, HAR 105

lab: a weekly session; see your schedule for the time and location

Instructors

A1: Tiago Januario, Ph.D. (januario@bu.edu, CDS 911, 665 Commonwealth Ave.)
A2/A4: David G. Sullivan, Ph.D. (dgs@bu.edu, CDS 839, 665 Commonwealth Ave.)

Office hours for all of the course staff will be on the course website (see below).

Teaching Assistants (TAs)

to be announced; see the course website for their names and contact info.

Course Assistants (CAs) : see the course website for their names and contact info.

Midterm Exams

You must be able to take the midterm exams, which will be held on two Wednesday evenings (October 14 and November 11) from 6:30-7:45 p.m. in locations to be announced. We are not scheduled to meet on any other Wednesday evenings.

Course Website: http://www.cs.bu.edu/courses/cs111
In addition, announcements and some course materials will be posted Blackboard.

Requirements and Grading

1. Weekly problem sets and final project (25% of the final grade)
2. Exams: two midterm exams (30%) and a final exam (35%)
3. Participation (10%; see below)

To pass the course, you must have a passing average on the problem sets and a passing average across the three exams.

Collaboration Policy

You are strongly encouraged to collaborate with one another in studying the lecture materials and preparing for the exams. Problem sets will include:

- *individual-only* problems that you must complete on your own
- *pair-optional* problems that you may complete alone or with a partner.

For both types of problems, you may discuss ideas and approaches with others, but such discussions should be kept at a high level and should not involve actual details of the code or of other types of answers. **You must complete the actual solutions on your own** (or, in the case of a pair-optional problem, alone or with a partner).

Rules for working with a partner on pair-optional problems:

- You may *not* work with more than one partner on a given assignment. (However, you are welcome to switch partners between assignments.)
- **You may *not* split up the work and complete it separately.**
- **You must work together** (at the same computer or via a Zoom meeting) for all problems completed as a pair, and your work must be a collaborative effort.
- You and your partner must *both* submit the same solution to each problem that you did as a pair, and you must put your partner's name at the top of the file.

Academic Misconduct

We will assume you have carefully read and understood BU's academic conduct code: http://www.bu.edu/academics/policies/academic-conduct-code

You should also carefully review the CS department's page on academic integrity: http://www.bu.edu/cs/undergraduate/undergraduate-life/academic-integrity

Prohibited behaviors include:

- copying all or part of someone else's work, even if you subsequently modify it; this includes cases in which someone tells you what to write for your solution
- viewing all or part of someone else's work (except for work that you and your partner do together on a pair-optional problem)
- showing all or part of your work to another student (except for work that you and your partner do together on a pair-optional problem)
- giving another student access to your laptop unless you monitor their usage
- consulting solutions from past semesters, or those found online or in books
- ***using ChatGPT, GitHub Copilot or other forms of generative AI when writing code or solving other problems on the homework assignments***
- posting your work where others can view it without your permission, even after you complete the course
- receiving assistance from or collaborating with others during an exam, or using materials other than those that are explicitly allowed.
- failing to ***power off and put away*** all devices during an exam, including phones, watches, ear buds and smart glasses.

Incidents of academic misconduct may be reported to the Academic Conduct Committee (ACC), and the ACC may suspend/expel students found guilty of misconduct. ***At a minimum, students who engage in misconduct will receive a score of 0 on the assignment or exam in question.***

Course Materials

- **Required:** CS 111 Coursepack. This contains all of the lecture notes for the course. Details about how to obtain it will be provided in class and in Lab 0.
- **Optional:** *CS for All* by Alvarado, Dodds, Kuenning, and Libeskind-Hadas (Franklin Beedle, 2019). This book is *not* required.
- **Required:** We will be using the Top Hat Pro platform for in-lecture and pre-lecture questions, as well as for attendance. Details will be provided in class.

Other Policies

Writing code: The problem sets will require you to write code using the Python programming language. In doing so, ***you must limit yourself to aspects of Python that we have discussed in lecture, unless a problem indicates otherwise.*** At a minimum, failure to do so will result in a score of 0 for the corresponding problem.

Late problem sets: Problem sets must be submitted by the date and time listed on the assignment (typically by 11:59 p.m.). There will be a 10% deduction for submissions up to 24 hours late. **We will not accept any homework that is more than 24 hours late.** Plan your time carefully, and don't wait until the last minute so you will have time to ask questions and obtain assistance from the course staff.

Pre-lecture preparation: To prepare for lecture, you will typically be required to watch one or two short videos and/or to complete an online quiz. **The pre-lecture quiz questions will be graded for correctness**, so you should make sure to devote the time needed to carefully prepare for lecture. Pre-lecture quizzes must be submitted by the specified date and time; **late submissions will not be accepted**.

Your *participation grade* will be based on three things: (1) the pre-lecture and in-lecture questions on Top Hat, (2) lecture attendance taken using Top Hat, and (3) lab attendance. You will receive full credit for participation if you earn at least 85% of the points on Top Hat, make 85% of the lecture-attendance votes, and participate in at least 85% of the lab sessions. For a given component, if you end up with x% where x is less than 85, you will get x/85 of the possible points.

Absences: Our participation policies are designed to allow for occasional absences due to illness or other special situations. We will record the lectures and make the recordings available to everyone. If you need to miss a lecture for any reason, you should watch its recording ASAP and keep up with the pre-lecture tasks and problem sets. **Please do not email your instructor about absences of this type.**

Laptops: By CS department policy, you are expected to have a laptop capable of running a currently supported version of Microsoft Windows, Mac OS, or Linux. You should bring your laptop to your weekly lab session, but you do **not** need it in lecture. **Indeed, we encourage you to avoid using your laptop during lecture, because doing so can easily lead to distraction.** Instead, we encourage you to take notes on a printed version of our *Coursepack* or on a PDF version of it that you have downloaded onto a tablet.

The final grades are *not* curved. The performance of the class as a whole is taken into account in assigning letter grades, but this can only improve your grade, not harm it.

The final exam will replace your lowest problem-set grade if doing so helps your final grade. The final exam will also replace your lowest midterm-exam grade if doing so helps your final grade. Regardless of whether any such replacements occur, the final exam itself will always count for at least 35% of the final grade.

Extensions and makeup final exams will only be given in *documented* cases of serious illness or other emergencies. **We do not give makeup midterm exams**; if you need to miss one, your grade for it will be replaced by your final-exam grade (see above).

You cannot redo or complete extra work to improve your grade. Incompletes will not be given except in extraordinary circumstances.

Schedule (tentative)

week	lecture dates	topics, exams, assignments, and special dates
0	9/2, 9/4	Course overview and introduction Python basics; data types and expressions
1	9/9, 9/11	Strings and lists A first look at functions *No lecture on 9/7 (Labor Day)* **Problem Set 0 (all) due on 9/13**
2	9/14, 9/16, 9/18	Making decisions (conditional execution) Functions (cont.) Local and global variables; the runtime stack Recursion *9/16: last day to add a class* **Problem Set 1, part I due on 9/17** **Problem Set 1, part II due on 9/20**
3	9/21, 9/23, 9/25	Recursion (cont.); recursive design List comprehensions **Problem Set 2, part I due on 9/24** **Problem Set 2, part II due on 9/27**
4	9/28, 9/30, 10/2	Lists of lists; encryption and decryption Algorithm design Representing information **Problem Set 3, part I due on 10/1** **Problem Set 3, part II due on 10/4**
5	10/5, 10/7, 10/9	Binary addition Gates and circuits; minterm expansion *10/7: last day to drop without a 'W'* **Problem Set 4, part I due on 10/8** **Problem Set 4, part II due on 10/11**
6	**10/13**, 10/14, 10/16	Arithmetic circuits and modular design Loops and imperative programming Cumulative computations *No lecture on 10/12 (Indigenous Peoples' Day)* *Lecture on Tuesday, 10/13 (Monday schedule)* *No labs this week* **Midterm 1 on 10/14 from 6:30-7:45 p.m.**

7	10/19, 10/21, 10/23	Loops (cont.); design using loops Nested loops **Problem Set 5, part I due on 10/22** **Problem Set 5, part II due on 10/25**
8	10/26, 10/28, 10/30	References; mutable vs. immutable data 2-D lists Object-oriented programming; file processing **Problem Set 6, part I due on 10/29** **Problem Set 6, part II due on 11/1**
9	11/2, 11/4, 11/6	Classes: creating your own types of objects Dictionaries *11/6: last day to drop with a 'W' or change to Pass/Fail* **Problem Set 7, part I due on 11/5** **Problem Set 7, part II due on 11/8**
10	11/9, 11/11, 11/13	Classes (cont.) **Midterm 2 on 11/11 from 6:30-7:45 p.m.** **Problem Set 8 (all) due on 11/15**
11	11/16, 11/18, 11/20	Games and AI Inheritance Overview of the final project **Problem Set 9, part I due on 11/19** **Problem Set 9, part II due on 11/22**
12	11/23	Finite-state machines *No lecture on 11/25 or 11/27 (Thanksgiving)* *No labs this week*
13	11/30, 12/2, 12/4	Finite-state machines (cont.) Algorithm efficiency **Final-project milestone due on 12/3** **Problem Set 10 due on 12/6**
14	12/7, 12/9	Algorithm efficiency (cont.) Problem "hardness" Course wrap-up **Full final project due on 12/9** *12/11-13: Study period*
15		**Final exam: Friday, Dec. 18, 12-2 pm** We will eventually arrange an alternate exam time for anyone with an exam-related conflict; ***those students should remain available for the entire exam period – up to and including Friday evening, December 18!***