CS 115 - Introduction to Computer Science
Fall 2022 Syllabus

Instructor

Dr. Zumrut Akcam-Kibis
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Office: Gateway South 242
Office Hours: MW 1:30 PM-2:30 PM(in-office), Tue 1:00 PM-2:00PM(online-Zoom), Th 10:00 AM-11:00 AM (online-Zoom)
Zoom link for online office hours: `https://stevens.zoom.us/my/zakcamki`

Course Information

Section A: MWF 10:00 AM-10:50 AM, Gateway North 204
Lab: LA or LB
Section B: MWF 11:00 AM-11:50 AM, Gateway South 216
Lab: LC or LD
Section C: MWF 12:00 PM-12:50 PM, Pierce 120
Lab: LE or LF
Labs: You must be registered for one of the labs for your section listed above and attend that lab every week (in-person).
Course Assistants: Adham Abdelwahab, Cindy Tran, Christopher Kang, Colleen Que, Daniel Craig, Krystal Hong, Nicholas Buckley, Rishabh Wadhawan, Steven DeFalco.
Their office hours and locations will be posted on Canvas.

Course Overview

This is an introduction to computer science, with an emphasis on programming (using the Python language). The topics include: design; algorithmic thinking; recursion; object-oriented programming; ethics in computer science; and some basics about computer systems: machine language, interpreters, compilers, and data representation.

Course Materials

Textbook: Christine Alvarado, Zachary Dodds, Geoff Kuenning, & Ran Libeskind-Hadas, *CS For All: an Introduction to Computer Science Using Python.*

You are responsible for the current version which is a printed textbook. It should be available at the campus bookstore and can also be found here: `https://fbeedle.com/our-books/26-cs-forall-9781590282908.html`

And for the ebook version: `https://www.redshelf.com/book/1189786/cs-forall-1189786-9781590282915-christine-alvarado-zachary-dodds-geoffrey-kuenning-ranlibeskind-hadas`

Website of the book:	`https://www.cs.hmc.edu/twiki/bin/view/CSforAll/`
Python tutorial:	A nice introduction to the language features, but not an introduction to programming: `http://docs.python.org/tutorial/`
Python Standard Library:	Comprehensive Documentation: `http://docs.python.org/library/`
Other Materials:	To be given on Canvas.

Software

During the first lab session you will download the IDLE Python programming environment. You are responsible for being familiar with IDLE, even if you prefer to use another environment such as VisualStudioCode when working on your own.

Warning! Be sure to use the latest version of Python 3.9. Both 2.7 and 3.9 are current branches of the language, but they have different feature sets. Both are actively used in industry, but in this course we'll use 3.9 (actually 3.8 will be fine too).

Coursework and Grading

Coursework

Computer science centers on programming, which is learned by doing. The coursework will include:

- Programming Assignments, main focus of your work.
- In-class exercises, some of which will be graded (also known as pop quizzes).
- Labs, to be completed individually until midnight of Thursday.
- Homeworks, to be completed on your own time. The assignment, and your submission, is via Canvas.

Grading

The course score is a weighted average of the following categories.

Homework	(15%)
Pop Quizzes	(5%)
Labs	(20%)
First Test	(10%)
Second Test	(15%)
Third Test	(15%)
Final Exam	(20%)

The lowest lab score will be dropped. Homework may include a few extra-credit problems, which can compensate for occasionally missing a pop quiz. Letter grades, with plus and minus, are assigned using the scale which can be found in Canvas for this course.

Credits for the Curriculum

Thanks to Christine Alvarado, Zachary Dodds, Geoff Kuenning, and Ran Libeskind-Hadas – faculty in CS at Harvey Mudd (and U.C. San Diego) — for providing support and adapting their course material for our use. Various improvements have been made by Brian Borowski, Dan Duchamp, and Dave Naumann.

CS 115 Policies

- You, your instructor, and the teaching assistants are bound by the Stevens Honor System. Students are responsible for reading and understanding the course policies in these web pages and for announcements made in class and in the course email list.
- You will be permitted to use the textbooks and course notes for programming assignments (homework and labs). During exams, you are not permitted to use notes, books, computing or communication devices unless a different policy is specifically announced by the instructor.
- During lecture and lab sessions please refrain from impolite behavior. In the physical classroom this includes talking on the phone, excessive texting, or otherwise being impolite.
- After grades are posted, you will have 3 days to inform your grader of a problem. You should also CC your instructor on the email. Do not try to request a grade change after three days, as you should learn from your mistakes in a timely fashion.

No makeup exams, labs, or quizzes

- You must go to your assigned lab session, unless given permission in advance by a TA.
- There are no make-ups for pop quizzes, labs or exams.

Individual work

Except when groups are explicitly allowed, work must be done individually. You are encouraged to discuss the problems with your classmates but you must not share the details of the solutions. Not by email, not by text message, not by Discord chat, not by shared Google doc, not by word of mouth, etc. If you are unsure whether you have shared too much, discuss the situation with the TA or instructor; it is your obligation to avoid even the appearance of cheating. We may use Moss (`https://theory.stanford.edu/~aiken/moss/`) or other systems to verify your code is not too similar to that of other students in the class. If the system indicates a high likelihood of cheating, we will treat it as a violation of the Stevens Honor System.

Late Homework

From time to time, all of us have trouble meeting deadlines, and as a near-beginning college student, you will be confronted with many difficult deadlines. But homework doesn't get easier to do if it's late, and falling behind can snowball. Hence, the following strict policy for homework will be put in place: 2% penalty for each hour past the deadline.

Communication

- You are more than welcome to ask the instructor and assistants questions as often as you want, and we will always be happy to help.
- The amount of help provided will be directly proportional to the amount of time left before the deadline. Please don't wait until the day before an assignment is due to see us; it'll be too late for us to provide help and too late for you to truly learn the material.
- Please do not ask at the end of the semester to find creative ways to increase your grade. If you suspect that you are not doing well, talk with the instructor to rectify the situation as quickly as possible so that you will have a good grade at the end of the semester.

CS 115 Goals and Assessment

At a high level, the instructor's goals for this course are to introduce you to fundamental concepts of computer science and to help you develop your ability to design, implement, and test programs. Several skills are needed to successfully write programs, including analytical thinking, systematic experimentation, persistence and patience, organization and time management, interpersonal communication, and effective use of reference material (reading technical documentation, searching the web). We focus on algorithmic thinking and problem solving: Analyzing requirements, algorithm design, functions and procedural abstraction, pre- and post-conditions, data abstraction, and invariants. We will emphasize techniques for design, such as data driven programming and object orientation. We will touch briefly on topics that can be studied in advanced courses, including, ranging from tools for testing and secure coding practices to theories encompassing cryptography and the limits of what is computable.

Official Course Outcomes:

- **(encoding)** Explain binary encodings used by Python for integers, real numbers, characters, and images.
- **(execution)** Demonstrate the dynamic behavior of Python programs that include array access, conditional execution, looping, object reference, and method invocation (including recursive invocation), by showing successive states of a computation.
- **(exceptions)** Interpret the information provided by the stack trace of a thrown Python exception.
- **(design)** Given a problem description, I am able to sketch a design as pseudocode or flowchart.
- **(coding)** Given a design, I am able to implement the design as a Python program.
- **(class)** Write a non-trivial instantiable Python class.
- **(state)** Explain the use of memory to implement static variables, instance variables, and local variables. Draw the state of the activation stack at any point in a computation.
- **(inheritance)** Given a Python class, write a non-trivial extended class.
- **(testing)** Write a unit test.

TENTATIVE COURSE SCHEDULE (subject to revision)

Week	Topics Covered
1	Elementary concepts of computer programming
2	Simple Python data types, list concept
3	Definition of Python functions, if/then/else concept
4	Recursion on lists
5	Filtering, map/reduce
6	Functions as values
7	Hardware representation of basic data types
8	Assembly language programming using HMMM simulator
9	Iteration
10	Representation of data: atomic vs. composite, mutable vs. immutable
11	Sorting
12	Object oriented programming: class concept
13	Object oriented programming: inheritance
14	Fundamentals of data structures and algorithms

Academic Integrity

Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at `http://web.stevens.edu/honor/`

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

> "I pledge my honor that I have abided by the Stevens Honor System."

Reporting Honor System Violations. Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at `www.stevens.edu/honor`.

Exam Room Conditions

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Room Conditions on the quiz or exam.

1. Students may use the following devices during quizzes and/or exams. Any electronic devices that are not mentioned in the list below are not permitted.

Device	Permitted?	
	Yes	No
Laptops		x
Cell Phones		x
Tablets		x
Smart Watches		x
Google Glass		x
Other (specify)		x

2. Students may use the following materials during quizzes and/or exams. Any materials that are not mentioned in the list below are not permitted.

Material	Permitted?	
	Yes	No
Handwritten Notes		x
Typed Notes		x
Textbooks		x
Readings		x

3. Students are *not* allowed to work with or talk to other students during quizzes and/or exams.

Learning Accommodations

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit `https://www.stevens.edu/office-disability-services`. If you have any questions please contact: Phillip Gehman, the Director of Disability Services Coordinator at Stevens Institute of Technology at pgehman@stevens.edu or by phone 201-216-3748.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

Inclusivity Statement

Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

Inclusion Statement

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in academic discourse and innovation. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to your instructor to make alternative arrangements.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions.

Mental Health Resources

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments are can be made by phone (201-216-5177).

Emergency Information

In the event of an urgent or emergent concern about the safety of yourself or someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, year round. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text "Home" to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is not urgent or time sensitive, please email the CARE Team at care@stevens.edu. A member of the CARE Team will respond to your concern as soon as possible.