AAI/CPE/EE 551-A Engineering Programming: Python

Department of Electrical and Computer Engineering
Fall 2024

Instructor: Dr. Joseph Helsing
Canvas Course Address: https://sit.instructure.com/courses/73409
Course Schedule: 6:30pm - 9:00pm, Friday
Course Room: Babio 104
Contact Info: jhelsing@stevens.edu
Office: Burchard 217
Office Hours: 5:00pm – 6:00pm, Tuesday/Thursday
1:30pm – 2:30pm, Friday
Virtual Office Hours: 10:00am – 11:00am, Monday/Wednesday
Virtual Session URL: https://stevens.zoom.us/j/7891949144
Prerequisite(s): Graduate Student or At Least Junior
Cross-listed with: AAI 551, CPE 551, EE 551

COURSE DESCRIPTION

This course presents tools, techniques, algorithms, and programming techniques using the Python programming language for data intensive applications and decision making. The course formally introduces techniques to: (i) gather, (ii) store, and (iii) process large volumes of data to make informed decisions. Such techniques find applicability in many engineering application areas, including communications systems, embedded systems, smart grids, robotics, Internet, and enterprise networks, or any network where information flows and alters decision making.

STUDENT LEARNING OUTCOMES

Learning Outcomes are measurable achievements to be accomplished by the completion of the course. After successful completion of this course, students will:

1. Learn how to design and program python applications
2. Learn how to use lists, tuples, and dictionaries in python programs
3. Learn how to write loops and decision statements in python
4. Learn how to read and write files in python.
5. Extract and analyze data in python
6. Learn how to use indexing and slicing to access data in python programs.
7. Prepare for their future career in Technology related fields

COURSE FORMAT AND STRUCTURE

This course is on-campus. To access the course, please visit stevens.edu/canvas. For more information about course access or support, contact the Technology Resource and Assistance Center (TRAC) by calling 201-216-5500.

Communication Policy

Email is the best way to get in touch with me during the semester, and my email address is (jhelsing@stevens.edu). Monday-Friday you can expect a response within 24 hours. Saturday and Sunday you can expect a response within 48 hours. For synchronous meetings, we can either meet during my office hours, or you can email me and we can schedule a meeting.

Syllabus Revisions

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or in-class announcements.

TENTATIVE COURSE SCHEDULE

Week	Dates	Topics	Book Chapter
1	Sept 6	Course Overview, Intro to Python	1
2	Sept 13	Input/Output, Variables, and Assignments	2
3	Sept 20	Conditionals, Loops, and Boolean Logic	3,4
4	Sept 27	Functions	5
5	Oct 4	Lists and Tuples	7
6	Oct 11	File I/O, Exceptions, and String Manipulation	6,8
7	Oct 18	Dictionaries and Sets	9
8	Oct 25	Exam 1	
9	Nov 1	Classes and Object-Oriented Programming	10
10	Nov 8	Inheritance and Polymorphism	11
11	Nov 15	Recursion	12
12	Nov 22	Linked Lists, Stacks, Queues,	
13	Nov 29	Thanksgiving Recess (NO CLASS)	
14	Dec 6	Additional Python Libraries/Wrap-Up	
15	Dec 13	Exam 2	
16	Dec 14-21	Final Exam Week	

COURSE MATERIALS

Textbook(s)

Starting Out with Python (5th Edition), by Tony Gaddis ISBN: 978-0135929032
OR
Starting Out with Python (4th Edition), by Tony Gaddis ISBN: 978-0134444321

COURSE REQUIREMENTS

Attendance

Live, synchronous lectures will be held during the scheduled class time and students are encouraged to attend all lectures in order to gain the full benefit of the course. While individual attendance will be tracked, it will not be graded. Additionally, as this course only meets once per week, missing a single class is equivalent to missing an entire week of lecture. If you are unable to attend lecture, please email your instructor as soon as possible, and be sure to work with your classmates to obtain copies of any lecture notes and/or activities.

Content Responsibility

Students are responsible for all content presented during lectures, assignments, videos, and required readings from the textbook. If you are confused or unsure about anything, please ask your instructor.

Labs

A lab covering recent topics and concepts will be assigned each week, except exam weeks. You will have five days, including the day it was assigned, to complete the lab, and it can be turned in up to two days late (see Late Submission Policy). Labs will need to be submitted via Canvas.

Quizzes

A brief in-class quiz will be assigned each week, except exam weeks, covering recent topics and concepts. You are allowed to bring handwritten notes on one side of a no larger than 3”x5” notecard.

Projects

Two large coding projects will be assigned during the semester. Details regarding each project will be provided once the project is assigned. Projects will need to be submitted via Canvas.

Exams

There will be two exams in this course, and they will be cumulative. Both exams will be in-class and on paper. An exam review will be provided before each exam. For exam 1, you are allowed to bring handwritten notes on one side of a no larger than 8.5”x11” or A4 sheet of paper. For exam 2, you are allowed to bring handwritten notes on both sides of a no larger than 8.5”x11” or A4 sheet of paper.

TECHNOLOGY REQUIREMENTS

Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Canvas

Technology skills necessary for this specific course

- Live web conferencing using Zoom

Required Equipment

- Computer: Current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone
- Calculator: A scientific or simpler calculator that does not have an internet connection

Required Software

- Microsoft Word or comparable software
- Adobe PDF or comparable software
- Microsoft Excel or comparable software
- Microsoft PowerPoint or comparable software

GRADING PROCEDURES

Questions about posted grades must be discussed with the instructor within two weeks of the grades being posted. After two weeks, barring an exceptional circumstance, grades will not be altered. Below is the mapping of numerical grades to letter grades for this course. Final course grades will be rounded to the nearest whole number.

Letter	Numerical
A	**95–100+**
A−	**90–94**
B+	**85–89**
B	**80–84**
B−	**75–79**
C+	**70–74**
C	**65–69**
F	**0–64**

Grades will be based on:

Assignments & Examinations	Total Percentage
Labs	**10%**
Projects	**20%**
Quizzes	**20%**
Exam 1	**25%**
Exam 2	**25%**

Late Submission Policy
Work will be accepted a maximum of 48 hours late, with the first 24 hours late incurring a 10% penalty, and the second 24 hours late incurring an additional 10% penalty. Work will not be accepted more than 48 hours past the deadline. In certain circumstances, the late work policy may be modified for individual assignments, such as if extensions to the original deadline are made.

Make-up Work Policy
With the exception of exams, no make-up work will be allowed in this course. In the event of an unavoidable absence for one of the reasons below, you have three days after the exam is given to email your instructor requesting a make-up exam, otherwise you will receive a 0 for the exam. The following events are grounds for a make-up exam: being a participant in a conference in which you are presenting; being in an athletic or other Stevens associated event in which you are an active participant; a family emergency; a severe illness; military duty; participating in a religious event that you have provided the instructor with advance notice of.

Grade Drop Policy
At the end of the semester, the lowest lab grade and the lowest two quiz grades will be dropped, and not included in your final course grade calculation.

Collaboration Policy
For each exam, quiz, and project all work is expected to be your own and no collaboration is allowed, unless otherwise stated in the instructions. However, for the weekly labs and any non-graded, practice assignments, students are welcome to work together to solve problems.

Generative AI Technologies
While you are allowed to use generative AI technologies in your labs, keep in mind that these assignments are designed to provide you with practice regarding the topics and concepts in class. If you are using code generated by an AI program in your lab programs, you will need to specify what portions of your program are generated by an AI using proper commenting. If you do not actively engage with the course material, you may not perform well on the assessments which will negatively impact your final grade in the course.

You are not allowed to use generative AI technologies on projects, quizzes, or exams, and if it is determined that you have done so it will be considered cheating and dealt with under relevant Stevens policies.

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."
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.

Graduate Student Code of Academic Integrity
All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found on the Office of Graduate Academics web page.

Special Provisions for Undergraduate Students in 500-level Courses
The general provisions of the Stevens Honor System do not apply fully to graduate courses, 500 level or otherwise. Any student who wishes to report an undergraduate for a violation in a 500-level course shall submit the report to the Honor Board following the protocol for undergraduate courses, and an investigation will be conducted following the same process for an appeal on false accusation described in Section 8.04 of the Bylaws of the Honor System. Any student who wishes to report a graduate student may submit the report to the Senior Vice Provost for Graduate Education or to the Honor Board, who will refer the report to the senior vice provost. The Honor Board Chairman will give the Senior Vice Provost for Graduate Education weekly updates on the progress of any casework relating to 500-level courses. For more information about the scope, penalties, and procedures pertaining to undergraduate students in 500-level courses, see Section 9 of the Bylaws of the Honor System document, located on the Honor Board website.

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 disabilities to help students achieve their academic and personal potential. They facilitate equitable 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/student-diversity-and-inclusion/disability-services. If you have any questions please contact the Office of Disability Services at disabilityservices@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

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.

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 pronouns and/or name, please inform the instructor of the necessary changes.

Religious Holidays
Stevens is a diverse community that is committed to providing equitable educational opportunities and supporting students of all ethnicities and belief systems. Religious observance is an essential reflection of that rich diversity. Students will not be subject to any grade penalties for missing a class, examination, or any other course requirement due to religious observance. In addition, students will not be asked to choose between religious observance and academic work. Therefore, students should inform the instructor at the beginning of the semester if a requirement for this course conflicts with religious observance so that accommodations can be made for students to observe religious practices and complete the requirements for the course.

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 can be made by phone (201-216-5177), online at https://stevensportal.pointnclick.com/confirm.aspx, or in person on the 2nd Floor of the Student Wellness Center.

EMERGENCY INFORMATION

In the event of an urgent or emergent concern about your own safety or the safety of 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.