

Python Programming for Data Analysis Section 01

CS 22B

Spring 2023 3 Unit(s) 01/25/2023 to 05/15/2023 Modified 01/27/2023

Contact Information

Instructor:	Aarohi Chopra
Email:	aarohi.chopra@sjsu.edu
Class Room, Day, and Time:	Duncan Hall 450 Monday and Wednesday 9:00 AM -10:15 AM PST

Office hour information:

Type	Days and Times:	Link:
Classroom	Monday and Wednesday 9:00 AM -10:15 AM PST Duncan Hall 450	The lectures are in person, zoom meetings are set up in case of online lectures. If a student has a restriction or emergency please let the professor know and a zoom session will be set up for them just so that they can keep up with the lecture.
Group Office Hours	TBD	Group office hours are held on the day homework is due, they are mostly held on discord. Students are welcome to ask homework questions, discuss among themselves or just listen for reference.
Individual Office Hours (20 min slots)	Friday 12:00 PM – 1:00 PM PST	Individual office hours are appointment based and use a live session via Zoom Booked with Calendly: <ul style="list-style-type: none">- Earliest: 2 weeks beforehand- Latest: 2 days beforehand

Course Description and Requisites

Hands-on Python programming skills for data analysis. Skills include finding a solution for a given problem and casting it as an

algorithm, translating an algorithm to executable code, and debugging and testing code. Applications focus on computational techniques to understand, analyze, and visualize data.

Prerequisite(s): CS22A with a grade of C- or better, or consent of the instructor.

Letter Graded

* Classroom Protocols

(Virtual) Classroom Protocols and Etiquettes:

- **Attendance:** Strongly recommended and encouraged
 - **Be Punctual**
 - **Mute:** Unless you are speaking, keep your microphone on mute. *Mute upon entry.*
 - The video does not need to be on. Strongly recommend and encourage video to be on during individual office hours.
 - If your video is on, be **mindful of background distractions**
 - If there are distractions, use an appropriate and professional virtual background that is NOT objectively offensive or demeaning.
 - **Stay on top of coursework:** Students are responsible for their knowledge and any course-related work.
 - **Follow the rules of netiquette:** Be respectful. Be dressed appropriately if you want to turn your camera on.
 - **Zoom recordings of the lectures(if any):** Posted by the end of the day. Email me if they are not.
 - You are only allowed to view it. You do not have permission to share the records or ANY course materials with someone who is not in this class.
 - These are protected by the instructor's copyright
 - **Accessibility:** Any student that needs accommodations or assistive technology due to a disability should work with the Accessible Education Center (AEC), and the instructor.
 - I am always available if you need any help. I am very active on discord and usually reply within a couple of hours if you message me after noon. Emails are responded to within a day or two depending on how many I have been receiving.
 - If you are facing any troubles outside or inside the classroom, accommodations will be given whether it is about late submission, help during exams, regrading, or help with course material but it is very important for me to be aware of your issues and see that you truly care.

≡ Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

🎯 Course Goals

Learning hands-on Python programming skills.

Skills include:

- casting a problem as an algorithm
- translating an algorithm to executable code
- debugging and testing code

Applications focus on computational techniques to understand, analyze, and visualize data.

Course Format:

- Canvas Learning Management System is your main source for information: <https://sjsu.instructure.com>
 - All course material will be posted on Canvas.
 - You are responsible to check Canvas regularly for any updates.
- The class will be mostly spent in lecture mode with participation.

- Written assessments and a project will be used to measure student learning

Lectures will be conducted until May 15 (Subject to Change)

Python Programming Environment:

We will be using Google Colab (<https://colab.research.google.com/>) with Chrome or any supported web browser: and program in Python within Jupyter notebook. There is no additional software installation is required.

If students want local software, Jupyter notebook is recommended.

Important notes

1. By enrolling and attending the classes you assure that you are fully aware of and completely agree with the syllabus and the guidelines set in it.
2. Try to include your name, initials, or any identifying features in any assignments that you submit online or offline as in cases of regarding or cross-checking it makes it easier to trace back your submissions.
3. Ask for any help and all the people in-charge including me, the graders or the advisors **will help you**.

Course Learning Outcomes (CLOs)

Upon successful completion of this course, you will be able to

1. Write programs using various data types and basic techniques such as function calls, loops, and conditionals.
2. Use and manipulate several built-in data structures such as lists, arrays, and dictionaries, including nested data structures.
3. Break a medium-sized problem down into smaller parts and solve each sub-problem individually.
4. Test and debug programs.
5. Use objects and associated methods provided by the programming language.
6. Learn about sorting algorithms and complexities.
7. Implement objects and associated methods.
8. Write recursive functions. (Optional lecture)

Course Requirements and Assignments

Technology Requirements

Students are required to have an electronic device (laptop, desktop, or tablet) with a camera and built-in microphone. [SJSU has a free equipment loan program available for students](#). Students are responsible for ensuring that they have access to reliable Wi-Fi during tests. If students are unable to have reliable Wi-Fi, they must inform the instructor, as soon as possible or at the latest one week before the test date to determine an alternative. See Learn Anywhere website for current Wi-Fi options on campus.

Grading Information

Grading calculation will be based on the following:

- Final Exam 20%
- Hands-On 35%
- Participation 5%
- Midterm 1 10%
- Midterm 2 10%
- Project 20%

Late Submission: No late submission for the project, midterms, or final exam.

However, under certain circumstances, lab reports/hands-on per student might be accepted late. It will need to be handed in within a week and will be graded with 10% off for each day's extension. Under uncertain circumstances, the student should let the professor know before the assignment submission about their delay only then will the assignment be considered for being graded late. If a student informs about their missing submission after the due date they will not be allowed to submit it or receive credit.

Exams: You must submit only your own work only. Copying and any other forms of cheating will not be tolerated and will result in a failing grade (F) for the course and be reported to the department. If copying and any other forms of cheating are done on any type of assessment (midterm and final), this will be combined with other disciplinary actions from the university.

Grading Scale:

Percentage Range	Letter Grade	Percentage Range	Letter Grade
97.0% – 100%	A plus	72.0% – 76.99%	C
93.0% – 96.99%	A	70.0% – 71.99%	C minus
90.0% – 92.99%	A minus	67.0% – 69.99%	D plus
87.0% – 89.99%	B plus	62.0% – 66.99%	D
82.0% – 86.99%	B	60.0% – 61.99%	D minus
80.0% – 81.99%	B minus	<60.0%	F
77.0% – 79.99%	C plus		

1. Final Exam – 20%:

- Contact me if you cannot make it at least 3 weeks beforehand.

2. Hands-on – 35%:

- Help you understand the material and increase your skills.
- You are welcome to work with each other, but do not copy the code.
- Only accepted through Canvas.
- Do not email it to the grader or professor.

3. Participation – 5%:

- Questions and quizzes will be given in the class at random and students are supposed to collaborate and attempt to answer those during class time.
- Participation assignments will be given which are to be submitted before the end of the day.
- Need to be present for all lectures.
- These assignments will be graded on the basis of participation and not correctness.

4. Midterm 1 and 2 – 20% (10% each): Contact me if you cannot make it to the midterm at least 2 weeks beforehand.

5. Project – 20%:

1. Will include a paper, your group's code, peer evaluations, and a 10-min presentation
2. Groups of 2 will be formed.

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>). Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Course Schedule – Tentative and Subject to Change:

Week	Date	Topic	Assignment Due
1	1/25	Syllabus. Introductions. Course Expectations. Google Collab. Recap of CS22A. Work on Lecture 1 Participation Question 1 open	
2	1/30	Recap Q For Loops Slides for “For loop” + finish for loop portion of lecture 1	
2	2/1	Group Assignment [Lab day]	
3	2/6	Recap	Hands-On 1 Recap
3	2/8	Finish Recap. Start Intro to Pandas.	
4	2/13	Intro to Pandas.	
4	2/15	Data Visualization.	Hands-On 2 pandas
5	2/20	Data Visualization.	
5	2/22	Dictionaries. Start Complex Data Structures.	Hands-On 3 Visualization
6	2/27	Complex Data Structures.	
6	3/1	Midterm Review Practice Midterm	Hands-On 4 Complex

7	3/6	Midterm 1	
7	3/8	Explanation of Midterm 1. Iterators, Comprehensions, and Generators Finish Up and Review Any Material.	
8	3/13	Functional Programming.	
8	3/15	Functional Programming	
9	3/20	Generators. Introduction to Object-Oriented Programming.	Hands-On 5 Functional 1
9	3/22	Work Day.	Generator questions
10	3/27	Spring Break.	
10	3/29	Spring Break. (Cesar Chavez Day)	Hands-On 6 Functional 2
11	4/3	Object-Oriented Programming.	Project Proposal Due
11	4/5	Object-Oriented Programming.	
12	4/10	Object-Oriented Programming. Hands-on Practice Day	
12	4/12	Work on project	Hands-On 7 Object
13	4/17	Exception Handling.	
13	4/19	Exception Handling.	
14	4/24	Sorting	Hands-On 8 exception
14	4/26	Sorting	
15	5/1	Recursion as Extra credit for final	
15	5/3	Presentation (Mandatory Class)	ALL PROJECT MATERIAL DUE on 2/5 11:59

16	5/8	Presentation (Mandatory Class)	Hands-On 9 sorting
16	5/10	Final Review	
17	5/15	No class	
	5/23	FINAL EXAM: 7:15-9:30 AM	