SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Python for Everyone

CS 22A

Fall 2025 Sections 04, 05 In Person 3 Unit(s) 08/20/2025 to 12/08/2025 Modified 08/19/2025

Contact Information

Instructor: Dr. Wendy Lee

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Office Hours

- Wednesday 1:30 - 2:30 PM & Thursday 10:00 - 11:00 AM

Schedule appointment @ https://calendly.com/wendy-lee-sjsu/fall-2025-office-hours (https://calendly.com/wendy-lee-sjsu/fall-2025-office-hours)

Course Information

This introductory course teaches students how to use **Python programming** and **statistical methods** for data analysis. This course is conducted in person. You'll learn the fundamentals of Python, including data types, control flow, functions, and libraries essential for data science, like **NumPy** and **Pandas**. The curriculum also covers key statistical concepts, such as sampling distribution and hypothesis testing, and shows you how to apply them to real-world datasets. By the end of the course, you'll be able to use computational tools to explore, visualize, and interpret data, giving you the analytical skills needed for a variety of fields

Classroom Protocols

Students are expected to adhere to the Student Conduct Code found at the SJSU Student Conduct website (http://www.sjsu.edu/studentconduct/) (http://www.sjsu.edu/studentconduct/). Additionally, students should regularly attend lectures and labs (if applicable), treat instructors and peers with respect.

- **Dual Role of DH 351**: Lecture/Lab Duncan Hall DH 351 will be used as a dual-purpose room. It can be a regular lecture room, or it can be a computer laboratory for hands-on exercises.

- **Lecture Mode:** This is when DH 351 is used as a regular lecture room. Students are expected to listen and follow the lecture. Be considerate of your classmates and follow the lecture.
- **Lab Mode:** This is when DH 351 is used as a computer lab. Use your laptop computer. Work collaboratively on problems of the Hands-On and share your ideas and solutions with your classmates.
- We shall alternate between the two modes. A typical class will begin with a lecture (Lecture Mode) followed by a hands-on (Lab Mode).
- Please arrive at class on time so that you benefit fully from the course experience, and you do not disturb classmates and the instructor while class is in session.
- Students are responsible for knowing all materials covered in class lectures, readings, assignments, and other course-related work.
- Laptops, tablets, and other devices should only be used for course-related purposes.

Program Information

Welcome to this General Education course.

SJSU's General Education Program establishes a strong foundation of versatile skills, fosters curiosity about the world, promotes ethical judgment, and prepares students to engage and contribute responsibly and cooperatively in a multicultural, information-rich society. General education classes integrate areas of study and encourage progressively more complex and creative analysis, expression, and problem solving.

The General Education Program has three goals:

> **Goal 1:** To develop students' core competencies for academic, personal, creative, and professional pursuits.
> **Goal 2:** To enact the university's commitment to diversity, inclusion, and justice by ensuring that students have the knowledge and skills to serve and contribute to the well-being of local and global communities and the environment.
> **Goal 3:** To offer students integrated, multidisciplinary, and innovative study in which they pose challenging questions, address complex issues, and develop cooperative and creative responses.

More information about the General Education Program Learning Outcomes (PLOs) can be found on the GE website (https://sjsu.edu/general-education/ge-requirements/overview/learning-outcomes.php).

Course Learning Outcomes (CLOs)

Area 2. Mathematics Concepts and Quantitative Reasoning (*Formerly Area B4*).

Area B4 courses develop students' abilities to reason quantitatively, practice computational skills, and explain and apply mathematical and/or quantitative reasoning concepts to solve problems at the college level. Completion of Area B4 with a grade of C- or better is a CSU graduation requirement.

GE Area 2 Learning Outcomes

Upon successful completion of an Area 2 course, students should be able to:

1. use mathematical methods to solve quantitative problems, including those presented in verbal form;
2. interpret and communicate quantitative information using language appropriate to the context and intended audience;
3. reason, model, draw conclusions, and make decisions based on numerical and graphical data; and
4. apply mathematical or quantitative reasoning concepts to solve real life problems.

Writing Practice: Students will write a minimum of 500 words in a language and style appropriate to the discipline.

Program Learning Outcomes (PLO) for BS Data Science

Upon successful completion of this course, students will be able to:

PLO 1. Analyze a complex problem involving large datasets and apply principles of computing and other relevant disciplines to identify solutions.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

CLO 1. Explain fundamental programming constructs such as assignments, sequential operations, iterations, conditionals, and defining functions in Python.

CLO 2. Use basic mathematical techniques for solving quantitative problems.

CLO 3. Apply fundamental programming construct and mathematical concepts in solving real-world problems.

CLO 4. Use Python libraries to explore and analyze data.

CLO 5. Interpret data visualization and summary statistics in the context of a particular problem.

Course Materials

1. Click any assignment link under Python Programming Exercises in Canvas
(DO NOT go to the zyBooks website and create a new account)
2. Subscribe. A subscription is **$64**. Students may begin subscribing on Aug 06, 2025 and the cutoff to subscribe is Dec 02, 2025. Subscriptions will last until Dec 31, 2025.

Course Requirements and Assignments

The course will consist of pre-class video lectures, in-class lectures, Python programming exercises, hands-on exercises, homework, one midterm exam, and a final exam. All midterm and final exams are conducted in person.

Pre-class video lectures: Students must watch the assigned pre-class video lectures and complete the quizzes within the videos.

In-class hands-on exercises: After each lecture, students will be complete an in-class hands-on exercise during class, and it must be turned in through Canvas individually.

Homework: All homework will be completed online. The homework will reinforce and deepen the understanding of the content discussed in lecture, and also serve as preparation for the in-class midterm exams. No late assignments will be accepted. However, under exceptional circumstances, one problem set per student might be accepted late. It will need to be handed in before the following class meeting and will be graded with 30% off. Such an extension should be requested from the instructor.

Python programming exercises: Python programming exercises are assigned through Zybook. All students must have a valid Zybook subscription.

Quizzes: Quizzes will be given during class to assess your understanding of the course materials.

Midterm Exam: There will be an in-class midterm exam. The midterm will be held in the 9th week of the semester. Success on the midterm exams will indicate a mastery of the associated materials. No make-up exams will be given unless proper documentation of an emergency is provided.

Final Examination: There will be a comprehensive final exam on a date and time to be determined.

✔ Grading Information

- Pre-class Video Lessons (5%)
- Python Programming Practice (15%)
- In-class Hands-on (10%)
- Quizzes (15%)
- Homework (15%)
- Midterm Exam (20%)
- Final Exam (20%)

Grade Scale:

Grade	Points
A plus	*100 - 97.0*
A	*96.9 - 93*
A minus	*92.9 - 90.0*
B plus	*89.9 - 87.0*
B	*86.9 - 82.0*

B minus	*81.9 - 80.0*
C plus	*79.9 - 77.0*
C	*76.9 - 72.0*
C minus	*71.9 - 70.0*
D plus	*69.9 - 67.0*
D	*66.9 - 62.0*
D minus	*61.9 - 60.0*
F	*59.9 - lower*

University Policies

Per University Policy 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 the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Week	Date	Topics
0	8/20	Syllabus, Course Expectations, Introduction to Google Colab
1	8/25, 8/27	Introduction to Python Programming Variable assignment, String and other data types
2	9/1, 9/3	Introduction to Pandas Dataframe and Series Introduction to Statistical Research Process
3	9/8, 9/10	Loops and range Conditional Statement

4	9/15, 9/17	Central Tendency Measures of Variability
5	9/22, 9/24	Normal Distribution Standardized Scores
6	9/29, 10/1	Sampling Distribution
7	10/6, 10/8	Standard Error Estimation (Confidence Intervals)
8	10/13, 10/15	Midterm Review **Midterm Exam**
9	10/20, 10/22	Margin of Error Writing User-Defined Functions
10	10/27, 10/29	Hypothesis Testing
11	11/3, 11/5	Hypothesis Testing Discuss Midterm Results
12	11/10, 11/12	t-Tests to Compare Means
13	11/17, 11/19	t-Tests to Compare Means
14	11/24, 11/26	Correlation & Regression ***11/26 - Thanksgiving Holiday - no class***
15	12/1, 12/3	One-way ANOVA

16	12/8, 12/10	Final Exam Review **FINAL EXAM 8:30 - 10:30 AM**