

Python for Everyone

CS 22A

Fall 2026 Section 01 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 08/20/2026

Contact Information

Classroom: Duncan Hall 450 Tuesday and Thursday 12:00 pm to 1:15 pm

Instructor: Phu Duong (_phu.duong@sjsu.edu)

Office Hours:

- Tuesday and Thursday, 11:45 AM– 12:00 PM & 1:15 – 1:45 PM in or around Duncan Hall 450
- Inbox to schedule zoom appointment

Peer Educator: Jay Timbol (jonliam.timbol@sjsu.edu)

- Schedule an appointment through [Spartan Connect Student Home page](https://sjsu.campus.eab.com) (<https://sjsu.campus.eab.com>) (<https://sjsu.campus.eab.com/>)
- Office: SSC 600
- Tutoring schedule
 - Wednesdays 12pm - 2pm
 - Friday 10am - 12pm

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. Course is intended for students who have no prior programming experience.

Satisfies 2. Mathematical Concepts and Quantitative Reasoning (Formerly Area B4).

Corequisite(s): CS 1022AS is required for Math Enrollment Category M-III and M-IV.

Grading: Letter Graded

Course Description and Requisites

Introduction to Python programming in interesting, relevant, and practical contexts. Programming skills are developed to solve problems in such fields as life sciences, mathematics, and business. Fundamental programming constructs: data structures and algorithms, iterations, and functions. Course is intended for students who have no prior programming experience.

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Grading: Letter Graded

* Classroom Protocols

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

- **Dual Role:** Lecture/Lab 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. We shall alternate between the two modes
- **Lecture Mode:** Students are expected to listen and follow the lecture. Be considerate of your classmates and follow the lecture.
- **Lab Mode:** Use your laptop computer. Work collaboratively on problems of the Hands-On and share your ideas and solutions with your classmates.
- 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.
- You must obtain the instructor's permission to make audio or video recordings in this class.

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 \(https://sjsu.edu/general-education/ge-requirements/overview/learning-outcomes.php\)](https://sjsu.edu/general-education/ge-requirements/overview/learning-outcomes.php).

Course Learning Outcomes (CLOs)

GE Area 2: Mathematical Concepts and Quantitative Reasoning

Mathematical Concepts and Quantitative Reasoning courses enable students to use numerical and graphical data in personal and professional judgments and in understanding and evaluating public issues. Completion of Area 2 with a grade of C- or better is a CSU graduation requirement.

Area 2 courses help students understand information requiring quantitative analysis and how to use and analyze quantitative arguments. Completion of Area 2 with a minimum grade of C- 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 requirement

The minimum writing requirement for Area 2 courses is 500 words in a language and style appropriate to the discipline.

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

Practical Statistics for Data Scientists (PSDS): 50+ Essential Concepts Using R and Python by Peter Bruce, Andrew Bruce, and Peter Gedeck. ISBN-13: 978-1492072942

Zybook (**DO NOT go to the zyBook website to create a new account**). Follow the steps below

- Click on the Zybook HW 1 assignment link under Python Programming Exercises in Canvas
- Subscribe.

Pre-class Video Lessons:

They can be accessed directly through Canvas. These are short videos (around 3 minutes long)

Course Requirements and Assignments

The course will consist of pre-class video lectures, in-class lectures, Python programming exercises, hands-on exercises, homework, two midterm exams, and a final exam. All midterms 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 may require to complete an in-class hands-on exercise during class, and it must be turned in through Canvas individually.

Python programming homework: Python programming exercises are assigned through Zybook. **All students must have a valid Zybook subscription.** Students must complete the assigned questions and submit them by the due date. Students are encourage to work on unassigned questions, but those will not count toward the final grade

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

Team Project: There will be a programming group project. Each group consists of two students. Information on the term project, including topics and deadlines, will be given later. Each group will give a 10-minute, in-class presentation (5 minutes per student), during class time.

Midterm Exams: There will be two in-class midterm exams. No make-up exams will be given unless proper documentation of an emergency is provided

Final Examination: There will be a comprehensive, in-person, final exam

Grading Information

Pre-class Video Lessons (5%)

Zybooks Python Programming Homework (15%)

In-class Hands-on Exercises (10%)

Quizzes (10%)

Team Project (20%)

Midterm Exams (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) (<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) (<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	Reading /Video Assignment	Topics
Week 0	Thu Aug 20, 2026	Syllabus	Syllabus, Course Expectations, Introduction to Google Colab
Week 1	Tue Aug 25, 2026,		Introduction to Python Programming
	Thu Aug 27, 2026		
Week 2	Tue Sep 01, 2026	VA: Intro to Statistical Research Methods/ PSDS: Ch.1, p.7-13,29	Variable assignment, String, and other data types
	Thu Sep 03, 2026	VA: Central Tendency	
Week 3	Tue Sep 08, 2026	PSDS: Ch.2, p.13-19	Introduction to Pandas Dataframe and Series
	Thu Sep10, 2026	VA: Variability & Standardizing	Introduction to Statistical Research Process/ Central Tendency
Week 4	Tue Sep 15, 2026	PSDS: Ch.2, p.69-71	Measures of Variability
	Thu Sep 17, 2026	VA: Normal Distribution	Normal Distribution
Week 5	Tue Sep 22, 2026		Standardized Scores
	Thu Sep 24, 2026		Midterm Exam 1
Week 6	Tue Sep 29, 2026	PSDS: Ch.2, p.57-61	Loops and range
	Thu Oct 1, 2026	VA: Sampling Distribution	Conditional Statement
Week 7	Tue Oct 06, 2026		Visualizing Data with Graphs
	Thu Oct 8, 2026		Sampling Distribution
Week 8	Tue Oct 13, 2026		Standard Error
	Thu Oct 15, 2026	PSDS: Ch.2, p.65-68	User-defined Functions
Week 9	Tue Oct 20, 2026	VA: Estimation	
	Thu Oct 22, 2026		Estimation (Confidence Intervals)
Week 10	Tue Oct 27, 2026	PSDS: Ch.3, p.93-96	Margin of Error
	Thu Oct 29, 2026	VA: Hypothesis Testing	Midterm Exam 2
Week 11	Tue Nov 3, 2026	PSDS: Ch.3, p.110-112	Hypothesis Testing
	Thu Nov 5, 2026	VA: t-Tests	t-Tests to Compare Mean

Week 12	Tue Nov 10, 2026	PSDS: Ch.1, p.30-36 Ch.4, p.141-150	Independent and Dependent t-Tests
	Thu Nov 12, 2026	VA: Correlation. Regression	Correlation
Week 13	Tue Nov 17, 2026		Regression
	Thu Nov 19, 2026		
Week 14	Tue Nov 24, 2026		Project Deliveries.
	Thu Nov 26, 2026		Thanksgiving
Week 15	Tue Dec 1, 2026		Project Deliveries.
	Thur Dec 3, 2026		Final Exam Review
Final Exam	Tue, December 15		10:45 AM-12:45 PM in Duncan Hall 450