SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Advanced Programming with Python

CS 122

Spring 2026 Section 01 In Person 3 Unit(s) 01/22/2026 to 05/11/2026 Modified 01/24/2026

Contact Information

Instructor: Jelena Segan

- **Email:** jelena.segan@sjsu.edu

Class Days: Tuesday and Thursday
Time: 4:30 PM - 5:45 PM
Classroom: Duncan Hall 450

Office Hours

- Tuesday 1:30 PM to 2:30 PM
- Thursday 1:30 PM to 2:30 PM

Course Information

Course Schedule: In-person in Duncan Hall 450. Tu/Th 4:30 PM - 5:45 PM

Class time will be spent either in “lecture” mode or in “lab” mode, explained in “Class Protocol” in this document.

You are required to bring your wireless laptop to each class.

Exams will be in-class.

Course materials such as syllabus, handouts, notes, hands-on exercise, project instructions, etc. can be found on Canvas Learning Management System course login website at https://sjsu.instructure.com.

You are responsible for regularly checking with the Canvas messaging system to learn of any updates.

Course Description and Requisites

Advanced features of the Python programming language with emphasis on programming practice. Course involves substantial programming projects in Python.

Prerequisite(s): CS 146 (with a grade of "C-" or better). Computer Science, Applied and Computational Math, or Software Engineering majors only.

Letter Graded

Classroom Protocols

- Students are expected to adhere to the Student Conduct Code found at https://www.sjsu.edu/studentconduct/
- Additionally, students should regularly attend lectures and labs (if applicable), treat instructors and peers with respect, and refrain from the use of cell phones during any classroom activities.

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 Learning Outcomes (CLOs)

Upon successful completion of this course, students will be familiar with the following concepts and will be able to apply them in appropriate situations:

1. Design, implement and test readable, efficient programs that utilize Python built-in capabilities and follow Python best practices.

2. Understand implementation differences and performance tradeoffs associated with various Python data structures.

3. Manipulate and analyze large datasets and handle missing or inconsistent values.

4. Design and implement Python programs for data analysis and visualization, web development, and database interactions.

Course Materials

The following textbook will be made available in the course Canvas shell:

The Quick Python Book (Third Edition) by Naomi Ceder ISBN: 9781617294037

Biological data exploration with Python, pandas, and Seaborn by Martin Jones, 2020. ISBN-13: 979-8612757238

Additional course readings, examples, exercises, etc., will be assigned and provided by the instructor.

Python Programming Environment

Python 3.7 or above available at https://www.python.org/downloads/ (https://www.python.org/downloads/) Links to an external site.

Jupyter notebook

Course Requirements and Assignments

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities.

Quizzes (10%): Quizzes will take place in class only to assess students' knowledge of the course materials from the week before. A unique password will be provided for each quiz during thelecture. No make-up quizzes will be given.

Homework Assignments (20%): Homework assignments will be posted and must be submitted on Canvas. All assignments must be submitted by the posted due date to receive full credit. All works submitted on individual assignments must be your own. You may not share or copy code from fellow students or from the web/chatGPT. Infractions will be detected and will lead to an automatic failing grade for the course. If someone else copies your work, with or without your permission, you will be held responsible.

Midterms (MT) (20%):

MT1 (10%): March 10

MT2 (10%): April 14

No make-up exams will be given if a student misses the midterm exam submission deadline (unless you have a legitimate excuse or other personal emergencies and can provide documented evidence).

Term Project & Presentation (30%): The final project is a group project. Each group consists of 2 to 3 students. Here are the key deliverables and due dates:

Team Formation: March 3, 2026 (Tuesday)

Project Proposal: March 19, 2026 (Thursday)

Deliverables and Timeline: March 26, 2026 (Thursday)

Progress Report: April 14, 2026 (Tuesday)

Final Project Due: May 5, 2026 (Tuesday)

Presentation: Each group gives a 10-minute, in-class presentation on May 5 or May 7, 2026, during class time.

Final Exam (20%): Final Exam is on Monday, May 18 3:15 PM - 5:15 PM

It is a comprehensive test, including topics covered at the beginning and throughput the course.

Grading Information

Grading calculation will be based on the following:

10% Quizzes

20% Homework Assignments

20% Midterm I (10%) & Midterm II (10%)

30% Term Project

20% Final Exam

Incomplete work: Points will be deducted for incomplete question responses and solutions that are partially functional. Consult individual assignment for details of point allocation for each problem.

Late Policy - Homework ONLY: Life happens - You can submit two homework late, no explanation why necessary. Please just add in the comment box of your submission "USING LATE PASS".

Late Passes: You can submit the assignment up to 3 days after the deadline.

Makeup Exams: You must submit only your own work on exams. Makeup exams will only be given in cases of illness (documented by a doctor) or in cases of documentable, extreme emergency.

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

The course schedule is subject to change with fair notice. Changes will be announced on Canvas.

Week	Day	Date	Topics

W1	Th	January 22	Syllabus. Introductions. Course Expectations.
W2	Tu	January 27	Strings
W2	Th	January 29	Lists, Tuples, Sets & Dictionaries
W3	Tu	February 3	Control flow & comprehensions
W3	Th	February 5	Basic functions, lambda, generator functions, decorators
W4	Tu	February 10	Regular Expressions
W4	Th	February 12	Working with files and Exception handling
W5	Tu	February 17	Object-oriented programming
W5	Th	February 19	Object-oriented programming
W6	Tu	February 24	Intro to Pandas, Series, and Dataframe objects
W6	Th	February 26	Data exploration using Pandas
W7	Tu	March 3	Reshaping, Grouping and Categorizing data in Pandas
W7	Th	March 5	Intro to Seaborn for Data Visualization
W8	Tu	March 10	Term Exam #1
W8	Th	March 12	Working with Relationship Database
W9	Tu	March 17	Web Development with Flask
W9	Th	March 19	Web Development with Flask

W10	Tu	March 24	Deploying web app to the cloud
W10	Th	March 26	Deploying web app to the cloud
W11	Tu	April 7	Exam 1 answered
W11	Th	April 9	Make database handling easier with an Object-Relational Mapping (ORM)
W12	Tu	April 14	Term Exam #2
W12	Th	April 16	Create GUI Application using Python-Tkinter
W13	Tu	April 21	Distributing Python applications
W13	Th	April 23	Writing Unit Tests
W14	Tu	April 28	Exam 2 answered
W14	Th	April 30	Review
W15	Tu	May 5	Final Project Due. Project Presentations
W15	Th	May 7	Project Presentations
W17	M	May 18	Final Exam 3:15 PM-5:15 PM