

Advanced Programming with Python Section 03

CS 122

Spring 2025 In Person 3 Unit(s) 01/23/2025 to 05/12/2025 Modified 01/23/2025

Contact Information

Instructor: Dr. Wendy Lee

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Office: MH 413

Office Hours

Wednesday 2:30 - 3:30 PM & Thursday 10:00 - 11:00 AM

In person or Zoom

By appointment only: <https://calendly.com/wendy-lee-sjsu/spring-2025-office-hours>

Course Information

- Course Schedule: In-person in MH 225. M/W 12:00 PM - 1:15 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, hand-written, closed-book.
- 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://sjus.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/> [Links to an external site.](#)
- Jupyter notebook

- IDE of your choice, such as PyCharm Community Edition.

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 the lecture. No make-up quizzes will be given.

Hands-on Assignments (20%): Hands-on 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) (30%):

- MT1 (15%): March 12, 2025
- MT2 (15%): April 16, 2025

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 (20%): The final project is a group project. Each group consists of 2 students. Here are the key deliverables and due dates:

- Team Formation: February 19, 2025
- Project Proposal: February 26, 2025
- Deliverables and Timeline: March 5, 2025
- Progress Report: April 7, 2025
- Final Project Due: May 7, 2025
- Presentation: Each group gives a 10-minute, in-class presentation on May 7 or May 12, 2025, during class time.

Final Exam (20%): Final Exam is on **Tuesday, May 20, 2025, 10:45 AM-12:45 PM**. It is a comprehensive test, including topics covered at the beginning and throughout the course.

Grading Information

Grading calculation will be based on the following:

- 10% Quizzes
- 20% Hands-on Assignments

- 30% Midterm I (15%) & Midterm II (15%)
- 20% 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 - Hands-Ons ONLY: Life happens - You can submit **two** hands-ons 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.

Grading Scale:

Point Range	Letter Grade	Point 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		

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

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Week	Date	Readings	Topics
1	1/27	Ch1 QP	Syllabus. Introductions. Course Expectations. Bioinformatics:
1	1/29	Ch6 QP	Strings
2	2/3	Ch5 & 7 QP	Lists, Tuples, Sets & Dictionaries
2	2/5	Ch8 QP	Control flow & comprehensions
3	2/10	Ch9 QP	Basic functions, lambda, generator functions, decorators
3	2/12	Ch16 QP	Regular Expressions
4	2/17	CH13 & 14 QP	Working with files and Exception handling
4	2/19	Ch15 QP	Object-oriented programming
5	2/24	Ch15 QP	Object-oriented programming
5	2/26	Ch2 & 3 BD	Intro to Pandas, Series, and Dataframe objects
6	3/3	Ch4 & 5 BD	Data exploration using Pandas
6	3/5	Ch12-16 BD	Reshaping, Grouping and Categorizing data in Pandas
7	3/10	Ch6 BD	Intro to Seaborn for Data Visualization
7	3/12		Term Exam #1

8	3/17		Working with Relationship Database
8	3/19		Web Development with Flask
9	3/24		Web Development with Flask
9	3/26		Deploying web app to the cloud
10	3/31		Spring Recess - no classes
10	4/2		Spring Recess - no classes
11	4/7		Deploying web app to the cloud
11	4/9		Exam 1 answered
12	4/14		Make database handling easier with an Object-Relational Mapping (ORM)
12	4/16		Term Exam #2
13	4/21		Create GUI Application using Python-Tkinter
13	4/23		Distributing Python applications
14	4/28		Writing Unit Tests
14	4/30		Exam 2 answered
15	5/5		Review
15	5/7		Final Project due. Project presentations
16	5/12		Project presentations
17	5/20		Final Exam. Tuesday 10:45 am – 12:45 pm