SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Advanced Programming with Python Section 01

CS 122

Fall 2024 3 Unit(s) 08/21/2024 to 12/09/2024 Modified 08/21/2024

Contact Information

Instructor: Wendy Lee Ph.D.

Office Location: MacQuarrie Hall 413

Email: wendy.lee@sjsu.edu

Office Hours: Wednesday/Thursday 3:00-4:00 PM by appointment only:

https://calendly.com/wendy-lee-sjsu/fall-2024-office-hours (https://calendly.com/wendy-lee-sjsu/fall-2024-office-hours)

CS122 Class Schedule: Tuesday/Thursday 9:00 AM - 10:15 AM @ **DH 225**

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 http://www.sjsu.edu/studentconduct/ students/. 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

Other Readings

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/
- 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.

1. **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.***
2. **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 work 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.
3. **Midterms (MT) (30%):**
   - **MT1 (15%):** October 3, 2024
   - **MT2 (15%):** November 7, 2024

   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).
4. **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:** September 26, 2024
   - **Project Proposal:** October 8, 2024
   - **Deliverables and Timeline:** October 17, 2024
   - **Progress Report:** November 12, 2024
   - **Final Project Due:** December 3, 2024
   - **Presentation:** Each group gives a 10-minute, in-class presentation on December 3 or December 5, 2024, during class time.
5. **Final Exam (20%):** Final Exam is on Monday, December 16, 2024, 7:15-9:30 AM. It is a comprehensive test, including topics covered at the beginning and throughput the course.

✔ Grading Information

- 10% Quizzes
- 20% Hands-on Assignments
- 30% Midterm I (15%) & Midterm II (15%)
- 20% Term Project
- 20% Final Exam

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.

Quiz Drop

A student's 2 lowest quiz scores will be dropped.

Incomplete work

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

Academic Honesty

All assignments submitted, including quizzes, hands-on activities, exams, and projects, are expected to be the student's own original work. The instructor may, at any time, ask a student to explain the meaning of any part of an answer they have submitted. If the student cannot adequately explain their answer, the penalty for the first incident will be the loss of all points on that question. The penalty for the second and subsequent incidents will be the loss of all points on the assignment, along with a report to the Office of Student and Ethical Conduct.

Makeup Exams

Makeup exams will only be given in cases of illness (documented by a physician) or in documentable, extreme emergency cases.

Grading Scale

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

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. Readings (QP - *The Quick Python Book*, BD - *Biological data exploration with Python, pandas and seaborn*)

Week	Date	Readings	Topics
1	8/22	Ch1 QP	Syllabus. Introductions. Course Expectations.
2	8/27	Ch6 QP	Strings
2	8/29	Ch5 & 7 QP	Lists, Tuples, Sets, Dictionaries
3	9/3	Ch8 QP	Control flow and comprehensions
3	9/5	Ch9 QP	Basic functions, lambda, generator functions, decorators
4	9/10	Ch16 QP	Regular Expressions
4	9/12	Ch13 & 14 QP	Working with files and Exceptions handling
5	9/17	Ch15 QP	Object-oriented programming
5	9/19	Ch11 QP	Distributing Python applications
6	9/24	Ch2 & 3 BD	Intro to pandas, series and dataframe objects

6	9/26	Ch4 & 5 BD	Data exploration using pandas
7	10/1		Midterm #1 Review
7	10/3		Midterm #1
8	10/8	Ch6 BD	Intro to Seaborn
8	10/10	Ch7 & 9 BD	Plotting special types of scatter plots and categorical axes with seaborn
9	10/15	Ch12 & 13 BD	Grouping and Categorizing data in pandas
9	10/17	Ch14 & 16 BD Ch24 QP	Reshaping data and handling complicated or dirty data
10	10/22		Writing Unit Tests
10	10/24		Writing Unit Tests
11	*10/29*		Create GUI Application using Python-Tkinter
12	11/5		Midterm #2 Review
12	11/7		Midterm #2
13	11/12	Ch23 QP	Working with Relational Database
13	11/14	Ch23 QP	Make database handling easier with an Object-Relational Mapping (ORM)
14	11/19		Web Development with Flask
14	11/21		Web Development with Flask

15	11/26		Deploying web app to the cloud
15	11/28	*Thanksgiving Holiday - no class*	
16	12/3		Project Due. Project Presentations
16	12/5		Project Presentations
18	12/16		Final Exam: 7:15 AM - 9:30 AM