SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Advanced Programming with Python Section 01

CS 122

Spring 2025   In Person   3 Unit(s)   01/23/2025 to 05/12/2025   Modified 01/22/2025

👤 Contact Information

Instructor: Dr. Amith Kamath Belman

- **Email:** amith.kamathbelman@sjsu.edu
- **Office:** DH 251

Office Hours

Tuesday and Thursday, 12 PM to 1 PM, In person at DH 251

🕐 Course Information

Instructor: Dr. Amith Kamath Belman

- **Email:** amith.kamathbelman@sjsu.edu
- **Office:** DH 251

Lecture

Tuesday, Thursday, 10:30AM - 11:45AM, MH 422

💻 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

Regular attendance is an integral part of the learning process. Please arrive to class on time and make sure your cell phones are silent during the lecture. Your laptop must remain closed except for designated activities.

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.

Recording and Privacy

Students are prohibited from recording class activities, distributing class recordings, or posting class recordings. Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

▤ 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

Homework Assignments

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date and time. All work submitted on assignments must be your own. You may not share or copy code or answers from fellow students, from the web, or AI assistants . Infractions will be detected and will lead to an automatic 0. If someone else copies your work, with or without your permission, all involved will be held responsible.

There will be 8 homework assignments throughout the course in total, worth 16% of the total grade.

Hands-on in-class activities

Most lectures will include a hands-on lab/activity: you'll be given a link to a Jupyter notebook and you'll follow along on JupyterHub. You will export your work and submit it at the end of the lecture. Your submission will be graded for completion.

Hands-on in-class activities are worth 4% of total grade.

Quizzes

There will be periodic quizzes conducted in-class, on canvas, to assess students' knowledge of recent topics covered in the class.

There will be 6 quizzes in the course in total. The lowest quiz score among the 6 quizzes will be dropped for letter grade calculation. *No make-up quizzes will be given.*

The quiz scores are worth 10% of the total grade.

Midterm Exams

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

Each midterm is worth 15% of the total course grade.

Project

The final project is a group project. Each group consists of 2 students. The project consists of 4 important components of the term project. The components and weightage are listed below:

- Project proposal , 2 points
- Project progress report, 3 points
- Project final report, 5 points
- Project presentation, 10 points
- Teammates will also evaluate each other for contributions.

The project is worth 20% of the total grade.

Final Exam

The final exam is scheduled according to the SJSU Final Exam Schedule, on May 19th, 10:45 AM - 12:45 PM.

The Final Exam is worth 20% of the total grade.

✔ Grading Information

Academic Dishonesty

Students who are suspected of cheating will be referred to the Student Conduct and Ethical Development office and depending on the severity of the conduct, will receive a zero on the assignment or a grade of F in the course. Grade Forgiveness does not apply to courses for which the original grade was the result of a finding of academic dishonesty.

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.

Late Work - Homework assignments only

No submissions will be accepted more than two days late.

Late assignments will be evaluated with a 10% penalty for each day or partial day late. Late days include weekend days. For example, an assignment due on Tuesday by 5 PM will incur a penalty of 10% if submitted by 5 PM on Wednesday, 20% if submitted by 5 PM on Thursday, and will not be accepted after 5PM on Thursday.

Everyone gets two "free late days" for the semester. These are only applied for revoking the penalty and not applied for extending the deadline.

Hands-on in-class activities

Most lectures will include a hands-on lab: you'll be given a link to a Jupyter notebook and you'll follow along on JupyterHub. You will export your work and submit it at the end of the lecture. Your submission will be graded for completion. No late submissions are accepted.

This category is worth a total of 4% in final grade. The total percentage in this category will be rounded up to the nearest whole percent. For example, if you score 2.3% in this category, it will be rounded up to 3%.

Makeup Exams and Quizzes

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

There are 6 quizzes in total. The lowest quiz score will be dropped for final grade computation.

Project

Project component due dates and presentation schedules are not flexible and no late submissions will be accepted.

Criteria

Type	Weight	Topic	Notes
Homework Assignments	16%		
Hands-on in-class activities	4%		
Quizzes	10%		
Midterm Exams	30%	(15% Midterm 1 and 15% Midterm 2)	
Project	20%		
Final Exam	20%		

Breakdown

Grade	Range	Notes
A+	97 to 100%	
A	93 to 96.99%	
A -	90 to 92.99%	
B+	87 to 89.99%	
B	82 to 86.99%	
B -	80 to 81.99%	
C +	77 to 79.99%	
C	72 to 76.99%	
C -	70 to 71.99%	
D	60 to 69.99%	
F	below 60%	

🏛 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

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	Day	Topic	Readings	Quiz	HW	Project
1	Jan 23	Thur	Syllabus, Introductions, Course expectations	Ch. 1 QP			

2	Jan 28	Tue	Basics, lists, tuples, sets,	Ch. 5 QP			
2	Jan 30	Thur	Strings, Dictionaries	Ch. 6 and 7 QP			
3	Feb 4	Tue	Control flow	Ch. 8 QP	Quiz 1	HW1, Due Feb 11	
3	Feb 6	Thur	Functions, Lambda, generator functions, decorators	Ch. 9 QP			
4	Feb 11	Tue	Modules and scoping, and packages	Ch. 10 QP		HW2, Due Feb 18	
4	Feb 13	Thur	Classes and Object-oriented programming	Ch.15 QP			
5	Feb 18	Tue	Working with files and Exceptions handling	Ch.13 and 14 QP	Quiz 2	HW3, Due Feb 25	
5	Feb 20	Thur	Distributing Python applications	Ch. 11 QP			
6	Feb 25	Tue	Regular expressions, Unit Testing	Ch. 16 QP			
6	Feb 27	Thur	Intro to working with data and basic file wrangling	Ch. 20 QP		HW4, Due Mar 18	Project team formation Due Feb 27
7	Mar 4	Tue	Midterm 1 Review		Quiz 3		
7	Mar 6	Thur	Midterm 1				

8	Mar 11	Tue	Data analysis with pandas	Ch. 2-5 BD			
8	Mar 13	Thur	Data analysis with pandas	Ch. 2-5 BD			
9	Mar 18	Tue	Intro to seaborn, plotting	Ch. 7 and 9 BD	Quiz 4	HW5, Due Mar 25	Project proposal Due Mar 18
9	Mar 20	Thur	Grouping and Categorizing dat in pandas	Ch. 12 and 13 BD			
10	Mar 25	Tue	Reshaping data and handling dirty data	Ch. 14 and 16 BD Ch. 24 QP		HW6, Due Apr 6th	
10	Mar 27	Thur	Working with databases	Ch. 23 QP			
11	Apr 1	Tue					
11	Apr 3	Thur					
12	Apr 8	Tue	Creating a GUI application		Quiz 5		
12	Apr 10	Thur	Midterm 2 Review				Project progress due on Apr 10
13	Apr 15	Tue	Midterm 2			HW7, Due Apr 22	
13	Apr 17	Thur	Creating a GUI application				
14	Apr 22	Tue	Web development with Flask		Quiz 6	HW8, Due Apr 29	

14	Apr 24	Thur	Web development with Flask				
15	Apr 29	Tue	Deploying Web app				
15	May 1	Thur	Project Presentations				Project reports Due May 1
16	May 6	Tue	Project Presentations				
16	May 8	Thur	Review				
	May 19	Mon	Final Exam (10:45 AM to 12: 45 PM)				