
Advanced Programming with Python Section 01

CS 122

Spring 2023 3 Unit(s) 01/25/2023 to 05/15/2023 Modified 01/24/2023

Contact Information

Instructor: Rula Khayrallah

Email: Rula.Khayrallah@sjsu.edu

Office: MH 218

Phone: (408) 924-5153

Office Hours

Tuesday, 12:15 PM to 1:15 PM, online via Zoom

Wednesday, 4:00 PM to 5:00 PM, online via Zoom

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.

Class time will be spent in interactive lecture. You are required to bring your wireless laptop to class. Your laptop must remain closed except for designated activities.

We'll use iClicker to gather your feedback and check understanding during the lecture. iClicker helps me understand what you know, gives everyone a chance to participate, and allows you to review the material after class. You must be in the classroom to participate in the iClicker activity.

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.

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 able to:

1. Design, implement and test readable, efficient programs that take advantage of Python built-in capabilities and follow Python best practices.
2. Understand implementation differences and performance tradeoffs associated with various Python data structures.
3. Develop Python applications using the modules and packages available in the Python standard library.
4. Develop Python applications using third party libraries.
5. Design, implement and test substantial Python applications that include a graphical user interface, data analysis, web data extraction and web applications.

Course Materials

Software

Python 3.11

PyCharm Professional or Community Edition - recommended IDE

Course Requirements and Assignments

Homework

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date and time. A detailed grading rubric is provided for all programming assignments. Please make sure you read and follow the grading rubric to ensure full credit.

There will be individual as well as team assignments. I will make it clear whether the assignment is an individual assignment or a team assignment.

All work submitted on individual assignments must be your own. You may not share or copy code or answers from fellow students or from the web. Infractions will be detected and will lead to an automatic 0. If someone else copies your work, with or without your permission, you will be held responsible.

For team assignments, teams will consist of two students. The work must be done by both team members and both team members will receive the same grade. Teams may not share or copy code from other teams or from the web. Both team members will receive a zero if that happens regardless of who copied or shared the work. Both team members will also be reported to the Student Conduct and Ethical Development office.

Questions of the Week

We will have a single question every week to check your understanding of the previous week's material. I will count the 10 best scores out of the 12 total questions in the semester. You must be in the classroom and must use the LockDown browser to access and answer the question on Canvas. Missed questions cannot be made up.

Hands-on Labs

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.

Class Participation

You are expected to attend all class meetings as you are responsible for all the material discussed. Since active participation is essential to ensure maximum benefit, we'll use iClicker to give everyone a chance to participate. The iClicker participation points may be used to give your final grade in the course a slight boost.

Midterm Exam

The midterm exam will take place in the classroom during class time on March 14.

Final Exam

The final exam is scheduled according to the SJSU Final Exam Schedule, on Tuesday, May 23, 9:45 AM-12:00 PM.

✓ Grading Information

The final grade in the course will be calculated based on the homework assignments, questions of the week, hands-on labs, midterm and final exam.

The iClicker points may be used to give your final grade a slight boost. Students with the highest iClicker scores will get up to 1 bonus point. Students who violate the academic integrity policy are not eligible.

No extra credit options will be given.

Late Work

Late assignments will be accepted with a 1-point 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 1 point if submitted at 8 AM on Wednesday. Everyone gets two free 'late days' for the semester. No submissions will be accepted more than 2 days late.

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.

Criteria

Type	Weight	Topic	Notes
Homework Assignments	30%		
Questions of the Week	10%		
Hands-on Labs	10%		
Midterm	20%		
Final Exam	30%		

Breakdown

Grade	Range	Notes
A plus	98 to 100%	
A	93 to 97%	
A minus	90 to 92%	
B plus	87 to 89%	
B	83 to 86%	
B minus	80 to 82%	
C plus	77 to 79%	

Grade	Range	Notes
C	73 to 76%	
C minus	70 to 72%	
D	60 to 69%	
F	below 60%	

University Policies

Per [University Policy S16-9 \(http://www.sjsu.edu/senate/docs/S16-9.pdf\)](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 [Syllabus Information web page \(https://www.sjsu.edu/curriculum/courses/syllabus-info.php\)](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>). Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

When	Topic	Notes
Week 1: Jan 26	Course Logistics – Why Python?	Homework 1 due January 31
Week 2: Jan 31, Feb 2	Python Basics	Homework 2 due on February 9
Week 3: Feb 7, 9	Sequence Data Types	Q1 on February 7
Week 4: Feb 14, 16	Sets and Dictionaries, Files	Q2 on February 14 Homework 3 due February 23
Week 5: Feb 21, 23	More on Functions	Q3 on February 21 Homework 4 due on Mar 2
Week 6: Feb 28, Mar 2	Python Classes and Magic Methods	Q4 on February 28 Homework 5 due on March 9
Week 7: March 7, 9	Exceptions, Context Managers, Modules & Namespaces	Q5 on March 7 Review on March 9
Week 8: March 14, 16	Assertions & Unit Testing	Midterm on March 14 Homework 6 due March 23
Week 9: Mar 21, 23	The Standard Library: sys, argparse, os, regular expressions	Q6 on March 21
Week 10	Spring Recess - No Classes	
Week 11: Apr 4, 6	GUI programming with tkinter	Q7 on Apr 4 Homework 7 due Apr 13

When	Topic	Notes
Week 12: Apr 11, 13	Scraping the web: urllib and BeautifulSoup	Q8 on Apr 11 Homework 8 due Apr 20
Week 13: Apr 18, 20	Web Development with Flask	Q9 on April 18 Homework 9 due April 27
Week 14: Apr 25, 27	Numpy, Data Analysis with Pandas	Q10 on April 25
Week 15: May 2, 4	Advanced Data Analysis with Pandas	Q11 on May 2 Homework 10 due May 11
Week 16: May 9, 11	Data Visualization with Matplotlib	Q12 on May 9 Final Review on May 11
Final Exam	May 23 9:45 AM-12:00 PM	