San José State University
College of Science
Department of Compute Science
CS 122-01(27824): Advanced Programming with Python

Instructor(s):	Dr. Chung-Wen (Albert) Tsao
Telephone:	N/A
Email:	chung-wen.tsao@sjsu.edu (Once the class starts, please use Canvas Inbox)
Class Days/Time:	M/W 1:30PM - 2:45PM
Classroom:	• URL to Live Lectures on ZOOM: (Before Feb 11,2022) https://sjsu.zoom.us/j/89486024315?pwd=N2JWSTlvNXBhL1lrODk2d0grU0ZRdz09 • Science Building 164 (On and After Feb 14,2022)
Office Hours:	14:45 - 15:45 T/R
Office Location:	Join URL: https://sjsu.zoom.us/j/86795567911
Prerequisites:	CS 146: Data Structures and Algorithms with Grade C- or better
Class Meeting Dates:	Jan 26, 2022- May 16, 2022
Units	3 units

Course Format
Class time will be spent in interactive lecture with in-class programming exercises and code reviews. Live lectures are conducted on Zoom meeting at https://sjsu.zoom.us/j/94239999671 and will be recorded and available on the same day.

Canvas Course Site
Course materials such as syllabus, textbook, assignments, questions of the week and exams can be found on the Canvas Leaning Management System course website at http://sjsu.instructure.com. You are responsible for regularly checking with Canvas to learn of any updates.

Course Description
Advanced features of the Python programming language with emphasis on programming practice. Programming lab and projects include a graphical user interface, data analysis and visualization, web data extraction and web applications.

Course Learning Outcomes
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 Python programs that include a graphical user interface, data analysis and visualization, web data extraction and web applications.

Recommended Reference Textbook – Available online through Canvas
The Quick Python Book, Third Edition. Naomi Ceder ISBN: 9781617294037

Software
- Python 3.7 available at https://www.python.org/downloads/release/python-374/
- Jupyter Notebook
  - A web-based interactive computing platform that combines live code, equations, narrative text, visualizations, interactive dashboards and other media.

Assignments:
- No late assignments will be accepted without advanced arrangement with the instructor.
- All homework must clearly indicate each student's name, course, and assignment number.
- Students are allowed (and actively encouraged) to form study groups.
- You may discuss solutions but you MUST write up the answers independently.
- If you use a website or reference book, you must cite it.
- If there are multiple similar submissions not exhibiting independent thought, or with words obviously lifted from a book or website, ALL such submissions will receive scores of 0.

LockDown Browser + Webcam Requirement

This course requires the use of LockDown Browser and a webcam for online quizzes. The webcam can be the type that's built into your computer or one that plugs in with a USB cable. Watch this brief video to get a basic understanding of LockDown browser and the webcam feature. Download and install LockDown browser from here.

Workload:

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, including but not limited to internships, labs, and clinical practice. Other course structures will have equivalent workload expectations as described in the syllabus.

Pop Quizzes:

Pop quizzes locked with passcode may be given anytime during class. They are usually explained in class and due on the end of the lecture day. The purpose of pop quizzes is to encourage you to study and review the concepts and materials we discussed in the lecture.

Midterm and Final Examinations

- There will be one midterm examination, and a cumulative final exam.
- Exams typically include an in-class closed-book quiz and a take-home open-book written test.
- Exams may NOT be taken before or after the scheduled time for any reason. All the students need to attend synchronously.
- No make-up exams for anyone except for the medical emergency with the official medical proof.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- All exams include quizzes (closed book) and written test (open book)
- All exams will remain with the instructor.

Grading:
The final grade in the course will be calculated based on the following percentages:
- Homework Assignments (Lab/Project):   45%
- Pop Quizzes: 15%
- Midterm Exam: 20%
- Final Exam: 20%

The grading scale is as follows:
Final grades will not be adjusted in any way - so an 89.99% is still a B+.
No incomplete grades will be given.

Grading System:	Score Range	Grade	GPA
	≥ 97	A+	4.0
	≥93	A	4.0
	≥90	A-	3.7
	≥87	B+	3.3
	≥83	B	3.0
	≥80	B-	2.7
	≥77	C+	2.3
	≥73	C	2.0
	≥70	C-	1.7
	≥67	D+	1.3
	≥63	D	1.0
	≥60	D-	0.7
	Below 60	F	0.0

Classroom Protocol and Other Notes
- Students may be dropped from the class by the instructor for either one of the following reasons:
  - absence for 1st day of class without informing you before 2nd day of class
  - lack of prerequisites.
- Do not ask for special treatment. The rules for this course apply to everyone equally.
- Cheating will not be tolerable; a ZERO will be given to any cheated assignment/exams, and it will be reported to the Department and the University.
- Do NOT share/post online any course materials, PPT slides, or homework solutions.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- You are required to check Canvas for reading/assignments.
- The information on this syllabus is subject to change; changes, if any, will be clearly explained in class, and it is your responsibility to become aware of them.
- Once the class starts, use Canvas Inbox to email me for a faster response. I check the Canvas Inbox emails much more often than my school emails.

Attendance
University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class.

Consent for Recording of Class and Public Sharing of Instructor Material:
University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor's permission to record the course: Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such

permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material. Course material cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/" Make sure to review these policies and resources.

CoS COVID-19 Safety Training

All students registered for a College of Science (CoS) class with an in-person component must view the CoS COVID-19 Training slides and the SJSU Phased Adapt Plan website and acknowledge reading them according to their instructor's directions. By working together to follow these county and SJSU safety practices, we can keep our college safer. Students who do not follow COVID-19 Safety practice(s) outlined in the training, the SJSU Phased Adapt Plan, or instructions from their instructors, TAs or CoS Safety Staff may be dismissed from CoS buildings, facilities or field sites. Please review this training as needed throughout the semester, as updates will be implemented as changes occur (and posted to the same links).

Tentative Course Schedule (This schedule is subject to change with fair notice.)

Week	Date	Topics	Readings	Assignment
1	26-Jan	Course Logistics – Why Python?	Chapter 1,2,3,4	HW1
2	31-Jan	Python Basics		
	2-Feb	Control Flow, Functions		
3	7-Feb	Sequence Data Types: Lists, Tuples, Strings	Sec 5.1-5.7, 6.1-6.4	HW2
	9-Feb	Sets, Comprehensions	Sec 5.8	
4	14-Feb	Sets, Comprehensions	Sec 5.8	
	16-Feb	Dictionaries and their many uses	Chapter 7	HW3
5	21-Feb	Dictionary Comprehensions, Generator Expressions		
	23-Feb	Lambda, Closures, Decorators, Generator Functions	Chapter 9	HW4
6	28-Feb	Python Classes	Chapter 15	HW 5
	2-Mar	Magic Methods, Attribute Access, Properties		
7	7-Mar	Files, Exceptions, Context Managers	Chapter 13, 14	HW 6
	9-Mar	Modules and Namespaces, Packages	Chapter 10	
8	14-Mar	Review		
	16-Mar	Midterm		
9	21-Mar	Assertions and Unit testing	Chapter 19.1.5	HW 7
	23-Mar	Librarys: sys, argparse, os	Sec 11.1, Chapter. 12	
	28-Mar	Spring Break		
	30-Mar	Spring Break		

10	4-Apr	Regular expressions	Chapter 16	HW8
	6-Apr	Scraping the web: urllib, BeautifulSoup	Sec 22.4	
11	11-Apr	Scraping the web: urllib, BeautifulSoup		
	13-Apr	The GIL and performance issues, numpy		
12	18-Apr	Database Access	Chapter 23	HW9
	20-Apr	Database Access		
13	25-Apr	Data Analysis with Pandas	Chapter 24	HW10
	27-Apr	Data Analysis with Pandas – Case Study		
14	2-May	Visualization with matplotlib	Chapter 24	
	4-May	Development with Flask		
15	9-May	Web Development with Flask	Additional topic	HW11
	11-May	Web Development with Flask		
16	16-May	Web Development with Flask		
Final	20-May	Final Exam (Friday, May 20	12:15-2:30 PM)	