

**San José State University**  
**Department of Computer Science**  
**CS 122, Advanced Programming with Python, Section 1, Spring 2020**

**Course and Contact Information**

Instructor:	Rula Khayrallah
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Office Hours:	Drop-In: Monday 12-1 PM, Tuesday 10:30-11:30 AM By appointment only (15-minute slots): Wednesday 3-5 PM To schedule an appointment, please visit <a href="https://goo.gl/CXkgsE">https://goo.gl/CXkgsE</a>
Class Days/Time:	M-W: 10:30-11:45 PM
Classroom:	MH 422
Prerequisites:	CS 146 with a grade of C- or better

**Course Format**

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. We'll also have some in-class programming exercises and code reviews.

**Canvas Course Site**

Course materials such as syllabus, textbook, assignments, questions of the week and exams can be found on the [Canvas Learning Management System course website](http://sjsu.instructure.com) 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. Course involves substantial programming projects in Python.

**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 substantial Python applications that include a graphical user interface, data analysis, 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/>  
PyCharm Professional or Community Edition - recommended IDE

## **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. A detailed grading rubric is provided for all programming assignments. Please make sure you read and follow the grading rubric to ensure full credit.

Some assignments will be individual work. Other homework will be 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 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 0 if that happens regardless of who copied or shared the work.

### **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 13 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.

### **Midterm Exam:**

The midterm exam will take place in the classroom during class time on Wednesday, March 11.

### **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.

### **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 practica. Other course structures will have equivalent workload expectations as described in the syllabus.

### **Final Examination**

The final exam will take place in the classroom on Friday, May 15 from 9:45 AM-12:00 PM.

## Grading Information

### Determination of Grades

The final grade in the course will be calculated based on the following percentages:

Homework Assignments: 40%

Questions of the Week: 10%

Midterm: 20%

Final Exam: 30%

The iClicker points may be used to give your final grade a slight boost. Students with the highest iClicker score will get 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 11 PM on Tuesday. Everyone gets two free 'late days' for the semester. No submissions will be accepted more than 2 days late.

### Grade Scale

The letter grade will be determined based on the following scale:

A+ = 98% - 100%

B+ = 87% - 89%

C+ = 77% - 79%

D = 60% - 69%

F = below 60

A = 93% - 97%

B = 83% - 86%

C = 73% - 76%

A- = 90% - 92%

B- = 80% - 82%

C- = 70% - 72%

### Classroom Protocol

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.

### 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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>. Make sure to review these policies and resources.

# CS 122 Advanced Programming with Python, Fall 2019, Course Schedule

Please note that this schedule is subject to change with fair notice. Any changes will be announced in class and posted on the Canvas course site.

## Course Schedule

Week	Date	Topics	Readings TQPB	QoW	HW Due
1	Jan 27	Course Logistics – Why Python?	Chapter 1		HW1 Jan 29
1	Jan 29	Python Basics	Chapter 4		
2	Feb 3	Control Flow, Functions		Q1	HW2 Feb 10
2	Feb 5	Sequence Data Types: Strings, Lists and List Comprehensions, Tuples	Sec 5.1-5.7, 6.1-6.4		HW3 Feb 17
3	Feb 10	Sets and Set Comprehensions	Sec 5.8	Q2	
3	Feb 12	Dictionaries and their many uses	Chapter 7		HW4 Feb 24
4	Feb 17	Dictionary Comprehensions, Generator Expressions, Packing and Unpacking		Q3	
4	Feb 19	More on Functions: Variadic Functions, Lambda, Closures, Decorators, Generators	Chapter 9		HW5 Mar 2
5	Feb 24	Python Classes	Chapter 15	Q4	
5	Feb 26	Magic Methods, Attribute Access, Properties			HW6 Mar 9
6	Mar 2	Files, Exceptions, Context Managers	Chapter 13, 14	Q5	
6	Mar 4	Modules and Namespaces, Packages	Chapter 10		
7	Mar 9	Review		Q6	
7	Mar 11	Midterm			
8	Mar 16	Assertions and Unit testing			HW7 Mar 23
8	Mar 18	The Standard Library: sys, argparse, os	Sec 11.1, Chap. 12		
9	Mar 23	GUI programming with tkinter		Q7	
9	Mar 25	GUI programming with tkinter			HW8 Apr 6
10	Mar 30	Spring Recess			
10	April 1	Spring Recess			
11	Apr 6	The Standard Library: regular expressions	Chapter 16	Q8	
11	Apr 8	Scraping the web: urllib and BeautifulSoup	Sec 22.4		HW9 Apr 20
12	Apr 13	Scraping the web: urllib and BeautifulSoup		Q9	
12	Apr 15	The GIL and performance issues, NumPy			
13	Apr 20	Data Analysis with Pandas	Chapter 24	Q10	
13	Apr 22	Data Analysis with Pandas – Case Study			HW10 Apr 29
14	Apr 27	Visualization with matplotlib		Q11	
14	Apr 29	Web Development with Flask			
15	May 4	Web Development with Flask		Q12	HW11 May 11
15	May 6	Web Development with Flask			
16	May 11	Review		Q13	
Final	May 15	MH 422: 9:45 AM -12:00 PM			