CS 22B: PYTHON PROGRAMMING FOR NON-MAJORS II

Section 01, Spring 2021

San José State University
Department of Computer Science

COURSE AND CONTACT INFORMATION

Instructor:	Wendy Lee Ph.D.
Email:	wendy.lee@sjsu.edu
Class Days/Time:	Tue & Thu 9:00 am – 10:15 am (Pacific Standard Time)
Office Hours:	Schedule appointment @ www.sjsu.edu/people/wendy.lee/ Monday/Wednesday 10:00 am – 11:00 am
Classroom:	Online via Zoom
Prerequisites:	CS22A with a grade of C- or better, or consent of the instructor. This course is intended for students pursuing a Minor in Bioinformatics.

COURSE FORMAT

- This course will be conducted in a hybrid mode: Lectures and Labs will take place during live Zoom meetings. Zoom lectures will be recorded and posted in the Canvas Learning Management System at https://sjsu.instructure.com.
- Class time (live session) will be spent either in "lecture" mode or in "lab" mode, explained in "Class Protocol" in this document.
- Course materials such as syllabus, handouts, notes, hands-on exercises, projects, quizzes, exams, etc. can be found on Canvas Learning Management System. You are responsible for regularly checking with the Canvas messaging system to learn of any updates.
- Written and oral assessments will be used to measure student learning in this course.

COURSE DESCRIPTION

Hands-on Python programming skills. Skills include casting a problem as an algorithm, translating an algorithm to executable code, and debugging and testing code. Applications focus on computational techniques to understand, analyze, and visualize data.

COURSE LEARNING OUTCOME (CLO)

Upon successful completion of this course, you will be able to

CLO1. Write programs using various data types, and using basic techniques such as assignment, function calls, loops, and conditionals.
CLO2. Write recursive functions.
CLO3. Use and manipulate several built-in data structures such as lists, arrays, and dictionaries, including nested data structures.
CLO4. Break a medium sized problem down into smaller parts and solve each sub-problem individually.
CLO5. Test and debug programs.
CLO6. Use objects and associated methods provided by the programming language.
CLO7. Implement objects and associated methods.
CLO8. Implement program using functional programming methods.

RECOMMENDED TEXTS/READINGS

Advanced Python for Biologists by Martin Jones, 2017,
ISBN-13: 978-1495244377, ISBN-10: 1495244377.

Additional course readings, examples, exercises, etc. will be assigned and provided by the instructor.

PYTHON PROGRAMMING ENVIRONMENT

We will be using Google Colab (https://colab.research.google.com/) with Chrome or any supported web browser: and program in Python within Jupyter notebook. There is no additional software installation is required.

COURSE REQUIREMENTS AND ASSIGNMENTS

1. **Quizzes (10%)**: Quizzes will take place every Tuesday at the beginning of class to assess students' knowledge on the course materials from the week before. A unique password will be provided for each quiz during lecture. Each quiz will expire at the end of Wednesday of that week. **No make up quizzes will be given.**
2. **Hands-on Lab Report (30%)**: The purpose of the hands-on lab is to develop your understanding of the material and your skills in problem-solving. You will work on the hands-on exercise with a group partner assigned by the instructor.

Each student must write and submit independent lab reports. Hands-on lab reports are only accepted in Canvas. You must submit lab report on time to receive full credit.

3. **Midterms (MT) I & II (30%)**: MT1 (15%): February 25, 2021, MT2 (15%): April 22, 2021. 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 (10%)**: There will be a programming group project. Each group consists of two students. Information on the project, including topics and deadlines will be provided in February 2021. Each group gives a 10-minute, in-class presentation (5 minutes per student) on May 11 or 13, 2021, during class time. The term-project is due on Tuesday, May 11, 2021.
5. **Final Exam (20%)**: A cumulative Final Exam will be given on May 20, 2021, from 7:15 am to 9:30 am. If there is a time conflict, please inform the instructor at least two weeks in advance for rescheduling.

GRADING INFORMATION

Grading calculation will be based on the following:

- Quizzes - 10%
- Hands-on Lab Reports - 30%
- Midterm I & II – 30%
- Term Project – 10%
- Final Exam - 20%

Late Submission – No late submission of lab report or exams will be accepted. However, under exceptional circumstances, one lab report per student might be accepted late. It will need to be handed in prior to the following class meeting and will be graded with 30% off. Such an extension should be requested from the instructor.

Exams: You must submit only your own work only. Copying and any other forms of cheating will not be tolerated and will result in a failing grade (F) for the course and combined with other disciplinary actions from the university.

Grading Scale:

Point Range	Letter Grade	Point Range	Letter Grade
97.0 – 100	A+	72.0 – 76.99	C
93.0 – 96.99	A	70.0 – 71.99	C-
90.0 – 92.99	A-	67.0 – 69.99	D+
87.0 – 89.99	B+	62.0 – 66.99	D
82.0 – 86.99	B	60.0 – 61.99	D-
80.0 – 81.99	B-	<60.0	F
77.0 – 79.99	C+		

VIRTUAL CLASSROOM PROTOCOL

- **Live Session via Zoom**: Live Zoom meeting will be used as a dual-purpose virtual classroom. It can be a regular lecture room, or it can be a computer laboratory for hands-on team exercises in break-out rooms.
- **Lecture Mode:** This is when Zoom is used as a virtual lecture room. Students are expected to listen and follow the lecture. Be considerate to your classmates and follow the lecture. Keep your microphone muted during lecture. You can use the chat in Zoom to post questions during lecture.
- **Lab Mode:** Zoom break-out rooms will be use to group students into teams of three or more to work on hands-on lab exercises. Work collaboratively on problems of the hands-on exercise and share your ideas and solutions with your classmates.
- **Attendance**: Live virtual class attendance is highly recommended and strongly encouraged.
- **Follow the rules of netiquette**. Adhere to the same standards of behavior online that you follow in real life. Be respectful. Dress appropriately if you are going to participate in the virtual classroom with the camera on.
- **Recording of Zoom Classes**: Instructor will record the live virtual classes using Zoom and the recordings will be shared in the Canvas course shell. If you do not wish to be identified in a class recording, please contact your instructor to arrange an "anonymous" option prior to class.
- **Zoom recordings and course materials**: You are allowed view the Zoom recordings for your own study purposes only. You do not have the permission to record any course materials. Students will not be permitted to share any class recordings and course materials with someone who isn't enrolled in the class or without permission. The lecture recordings and course materials are protected by instructor's copyright.
- **Accessibility**: Any student that needs accommodations or assistive technology due to a disability should work with the Accessible Education Center (AEC), and the instructor.
- **Be Punctual**: Please arrive to the live sessions on-time so that you benefit fully from the course experience and you do not disturb classmates and the instructor while class is in session.
- **Stay on top of coursework**: Students are responsible for knowing all materials covered in lectures, assignments, and course-related work.

TECHNOLOGY REQUIREMENTS

Students are required to have an electronic device (laptop, desktop or tablet) with a camera and built-in microphone. SJSU has a free equipment loan program available for students: http://www.sjsu.edu/equipmentcheckout. Students are responsible for ensuring that they have access to reliable Wi-Fi during tests. If students are unable to have reliable Wi-Fi, they must inform the instructor, as soon as possible or at the latest one week before the test date to determine an alternative. See Learn Anywhere website: https://www.sjsu.edu/learnanywhere/equipment/index.php for current Wi-Fi options on campus.

VIRTUAL CLASSROOM ETIQUETTE

- Mute Your Microphone: To help keep background noise to a minimum, make sure you mute your microphone when you are not speaking.
- Be Mindful of Background Noise and Distractions: Find a quiet place to "attend" class, to the greatest extent possible.
- Avoid video setups where people may be walking behind you, people talking/making noise, etc.
- Avoid activities that could create additional noise, such as shuffling papers, listening to music in the background, etc.
- Position Your Camera Properly: Be sure your webcam is in a stable position and focused at eye level.
- Limit Your Distractions/Avoid Multitasking: You can make it easier to focus on the meeting by turning off notifications, closing or minimizing running apps, and putting your smartphone away (unless you are using it to access Zoom).
- Use Appropriate Virtual Backgrounds: If using a virtual background, it should be appropriate and professional and should NOT suggest or include content that is objectively offensive or demeaning.

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/

COURSE SCHEDULE

The course schedule is subject to change with fair notice. Changes will be announced on Canvas.

Week	Date	Topics
1	1/28	Syllabus. Introductions. Course Expectations. Google Colab, Jupyter notebook
2	2/2	Complex Data Structures. *Hands-On #1*
2	2/4	Complex Data Structures. *Hands-On #1*
3	2/9	Tree. *Hands-On #2*
3	2/11	Tree. *Hands-On #2*
4	2/16	Recursion. *Hands-On #3*
4	2/18	Recursion. *Hands-On #3*
5	2/23	Midterm 1 Review
5	**2/25**	**Midterm 1**
6	3/2	Object-Oriented Programming. *Hands-On #4*
6	3/4	Object-Oriented Programming. *Hands-On #5*
7	3/9	Midterm 1 Answers
7	3/11	Object-Oriented Programming. *Hands-On #6*
8	3/16	Functional Programming. *Hands-On #7*
8	3/18	Functional Programming. *Hands-On #8*
9	3/23	Functional Programming. *Hands-On #9 & #10*
9	3/25	Iterators, Comprehensions, and Generators. *Hands-On #11*
10	**3/30**	**Spring Break - No Class**
10	**4/1**	**Spring Break - No Class**
11	4/6	Exceptions handling. *Hands-On #12*
11	4/8	Exceptions handling. *Hands-On #12*
12	4/13	Introduction to pandas. *Hands-On #13*
12	4/15	Manipulating data using dataframe objects. *Hands-on #14*
13	4/20	Midterm Exam #2 Review
13	**4/22**	**Midterm Exam #2**
14	4/27	Manipulating data using dataframe objects. *Hands-on #14*
14	4/29	Data visualization. *Hands-On #15*
15	5/4	Midterm Exam #2 Answers
15	5/6	Data visualization. *Hands-On #15*
16	**5/11**	**Term project due. Term project presentation**
16	**5/13**	**Term project presentation**
17	**5/20**	**Final Exam - 05/20/2021**

Important dates:

02/08/2021: Last day to drop courses without an entry on student's permanent record.

02/15/2021: Last day to add courses for Spring 2021.

04/22/2021: Last day to Withdraw for Spring 2021.