CS 22A: PYTHON PROGRAMMING FOR NON-MAJORS

San José State University
Computer Science Department
Section 02, Spring 2020

COURSE AND CONTACT INFORMATION

Instructor:	Wendy Lee Ph.D.
Office Location:	MacQuarrie Hall 413 (MQ 413)
Email:	wendy.lee@sjsu.edu
Office Hours:	Wednesday 9:00 am – 10:00 am or by appointment
Class Days/Time:	Monday & Wednesday 12:00 pm – 1:15 pm
Classroom:	MacQuarrie Hall (MH 222)
Prerequisites:	This course is intended for students who have no prior programming experience and who are interested in pursuing a Minor in Bioinformatics.

COURSE DESCRIPTION

This course is an introduction to Python Programming in interesting, relevant, and practical contexts. Programming skills will be developed to solve problems in such fields as Life Sciences, Mathematics, and Business. Students will learn fundamental programming constructs including data structures, algorithms, iterations, and functions. Prerequisite: This course is intended for students who have no prior programming experience. This course is not open to computer science majors or minors or software engineering majors.

Note: This course is mainly for life science students interested in pursuing a Minor in Bioinformatics. In other words, we will cover Python with a bias towards examples drawn from Biology.

REQUIRED TEXTS/READINGS

Textbook: *Python for Biologists* by Martin Jones, 2015, ISBN-13: 978-1492346135, ISBN-10: 1492346136.

Note: The author is a biologist. This book, as well as Advanced Python for Biologists, were written especially for scientists who are new to programming. The author maintains a website for the books at http://pythonforbiologists.com. An older version of the book can be found online: http://userpages.fu-berlin.de/digga/p4b.pdf.

COURSE FORMAT

- Class time will be spent either in "lecture" mode or in "lab" mode, explained in "Class Protocol" in this document.
- You are required to bring your wireless laptop to each class.
- Exams will be in-class, hand-written, closed-book, and comprehensive.
- Course materials such as syllabus, handouts, notes, hands-on exercise, project instructions, etc. can be found on Canvas Learning Management System course login website at https://sjsu.instructure.com. You are responsible for regularly checking with the Canvas messaging system to learn of any updates.

COURSE LEARNING OUTCOME (CLO)

Upon successful completion of this course, students will be able to:

1. Explain fundamental programming constructs such as assignments, sequential operations, iterations, conditionals, defining functions, and abstraction.
2. Analyze and explain the behavior of Python programs.
3. Apply fundamental programming constructs in life and physical science contexts.

COURSE REQUIREMENTS AND ASSIGNMENTS

1. **Hands-On Exercises (20%)**: We will have a number of hands-on exercises. You are required to submit your answers of the Hands-On exercises in Canvas (due dates will be announced in class). Occasionally, you will be asked to come to the front of the class to go through your solutions (programs) and share them with (explain them to) the rest of the class.
2. **Homework (20%)**: All homework must be your own individual work. It is okay to have general discussions about the homework or read other materials for inspiration. Your work must be entirely your own. **It is never okay to share your code with other students**. If the other person submits your work, both students will immediate fail the entire course. Copying code from sources other than your own is plagiarism. **If caught plagiarizing, you will fail the entire course and will be reported to the Student Conduct and Ethical Development.**
   Please refer to the University Academic Integrity Policy F15-7 (http://www.sjsu.edu/senate/docs/F15-7.pdf).

   Assignments are due in the beginning of the lecture and must be submitted within Canvas by 11:59 am on the following dates:
   - Homework 1 due on Monday, February 17, 2020.
   - Homework 2 due on Wednesday, March 4, 2020.
   - Homework 3 due on Monday, March 23, 2020.
   - Homework 4 due on Wednesday, April 15, 2020.
   - Homework 5 due on Monday, April 27, 2020.

3. **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 given later. The term-project is due on Monday, May 4, 2020. Each group will give a 10-minute, in-class presentation (5 minutes per student) on May 4 or 6, 2020, during class time.
4. **Exams (50%):**

   Exam One (15%): Wednesday, March 11, 2020.
   Exam Two (15%): Wednesday, April 16, 2020.
   Final Exam (20%): Tuesday, May 19, 2020, 9:45 am – 12:00 pm.

   All exams are in-class, closed-book and comprehensive. You must submit only your own work on exams. No cell phone usage during exam and phone has to be in silent mode and out of reach. If you cheat in the exam, you fail the entire course and will be reported to the Student Conduct and Ethical Development.

GRADING INFORMATION

Grading calculation will be based on the following:

- Hands-On Exercises (20%)
- Homework (20%)
- Term Project (10%)
- Two Term Exams (30%)
- Final Examination (20%)

Late assignments: No late assignment will be accepted. However, under exceptional circumstances, one problem set 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.

Makeup Exams:

Makeup exams will be only be given in cases of verifiable emergencies. For final exams conflict (at least 2 other finals in a 24-hour period), student can arrange a makeup exam if the instructor is notified at least 3 weeks before the last class meeting.

GRADING INFORMATION

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+		

CLASSROOM PROTOCOL

- **Dual Role of MQ222**: Lecture/Lab MQ222 will be used as a dual-purpose room. It can be a regular lecture room, or it can be a computer laboratory for hands-on exercises.
- **Lecture Mode:** This is when MQ222 is used as a regular lecture room. Students are expected to listen and follow the lecture. Be considerate to your classmates and follow the lecture. Be respectfully quiet and no prolonged conversations during lecture. Students are expected to listen and follow the lecture. Be considerate to your classmates. No cell phones usage during lecture, including texting, talking, web-surfing, playing games, etc. Instructor reserves the right to confiscate cell phones from students who violate this rule.
- **Lab Mode:** This is when MQ222 is used as a computer lab. Laptops should only be used for course-related purposes. Work collaboratively on problems of the Hands-On and share your ideas with your classmates. We shall alternate between the two modes. A typical class will begin with a lecture (Lecture Mode) followed by a hands-on (Lab Mode).
- Regular class attendance is highly recommended and strongly encouraged.
- Please arrive to class 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.
- Students are responsible for knowing all materials covered in class lectures, readings, assignments, and other course-related work.

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/

COPYRIGHT OF MATERIALS

Copyright of Materials: All materials created by the instructor for this course, including lectures, handouts, homework, exams, solutions, and so on, are copyrighted property of the instructor. You may transcribe lectures or copy course materials for the use of yourself and other students registered in this course. You may not sell or give transcriptions of lectures or copies of course materials to others without the prior written consent of the instructor.

COURSE SCHEDULE

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

Week	Date	Topics
1	1/27	Syllabus, Introductions, Course Expectations, Python Interpreter and Python Coding Style, MJ Chapter One *Hands-On One*
2	1/29	MJ Chapter Two, Printing and Manipulating Text, pages 14 - 28 *Hands-On Two*
2	2/3	MJ Chapter Two, Printing and Manipulating Text, pages 28 - 36 *Hands-On Three*
3	2/5	MJ Chapter Two, Printing and Manipulating Text, pages 28 - 36 [Cont] *Hands-On Three*
3	2/10	MJ Chapter Three, Reading and Writing Files, pages 54 - 66 *Hands-On Four*
4	2/12	MJ Chapter Three, Reading and Writing Files, pages 54 – 66 [Cont] *Hands-On Four*
4	2/17	**Homework #1 due** MJ Chapter Four, Lists and Loops, pages 77 - 86 *Hands-On Five*
5	2/19	Homework #1 answers. MJ Chapter Four, Lists and Loops, pages 86 – 92 *Hands-On Six*
5	2/24	MJ Chapter Four, Lists and Loops, pages 86 – 92 [Cont] *Hands-On Six*
6	2/26	MJ Chapter Five, Writing our own Function, pages 105 - 119 *Hands-On Seven*
6	3/2	MJ Chapter Five, Writing our own Function, pages 105 – 119 [Cont] *Hands-On Seven*
7	3/4	**Homework #2 due** MJ Chapter Five, Writing our own Function, pages 121 – 122. [Cont] *Hands-On Eight*
7	3/9	Homework #2 answers. Review for Exam 1
8	3/11	**Midterm 1**
8	3/16	MJ Chapter Six, Conditional Tests, pages 129 – 139 *Hands-On Nine*
9	3/18	Term Exam 1 answers. MJ Chapter Six, Conditional Tests, pages 129 – 139 [Cont] *Hands-On Ten*
9	3/23	**Homework #3 due** MJ Chapter Six, Conditional Tests, pages 139 – 141 [Cont] *Hands-On Eleven*

Week	Date	Topics
10	3/25	Homework #3 answers. MJ Chapter Seven, Conditional Tests, pages 142 – 143 [Cont] **Project Proposal due** *Hands-On Twelve*
10	3/30	**Spring Recess - no classes**
11	4/1	**Spring Recess - no classes**
11	4/6	Review for Exam 2
12	4/8	**Midterm 2**
12	4/13	MJ Chapter Seven, Regular Expressions, pages 151 – 167 *Hands-On Thirteen*
13	4/15	**Homework #4 due** MJ Chapter Seven, Regular Expressions, pages 168 – 169 [Cont] *Hands-On Fourteen* Midterm 2 answers.
13	4/20	MJ Chapter Eight, Dictionaries, pages 179 – 193 *Hands-On Fifteen*
14	4/22	MJ Chapter Eight, Dictionaries, pages 179 – 193 [Cont] *Hands-On Fifteen*
14	4/27	**Homework #5 due** MJ Chapter Eight, Dictionaries, page 194 [Cont] *Hands-On Sixteen*
15	4/29	Homework #5 answer. *Hands-On Sixteen*
15	5/4	**Project due** Project Presentations
16	5/6	Project Presentations
16	5/11	Review for final exam
17	5/19	**Final Exam. Tuesday, May 19, 2020, 9:45 am – 12:00 pm**

Important Dates:

2/4/2020: Last day to drop courses without a "W" grade.
2/5/2020: Late drop (petition required)
2/11/2020: Last day to add courses for Spring 2020.
4/23/2020: Last day to withdraw for Spring 2020.