OMIS 30 - Introduction to Programming

Santa Clara University Leavey School of Business

Fall 2020

Logistics:

Class times: Tuesday & Thursday

- 5:40 PM - 7:20 PM *Lecture Required Section
- 2:00 PM – 3:40 PM *ASync/Online Delivery Section

Location: Zoom, ZYBooks, and Google Groups

Instructor: Denis Vrdoljak (dvrdoljak@scu.edu)
Office hour times: Thursdays 7:40pm, and by appointment
Office hour location: Zoom (email instructor for link)

Course Objectives:

- Orient students with basic command line skills
- Orient students with fundamental Python programming skills
- Orient students with coding best-practices & tools

Course Measurables:

- Students can run command-line commands.
- Students can write self-contained programs via Python.
- Students can read, interpret, and understand functional code.
- Students can perform a data analysis on a csv file in Python using Jupyter Notebooks
- Students collaborate on code to write a self-contained final project.
- Students can write a simple web-app.

Course Topics:

1. Computer setup with Anaconda
2. Jupyter notebooks
3. Shell scripts and CLI basics - cd, ls, pwd, mkdir, move, copy, touch, echo, nano/vi
4. Python Basics – print, format, math, PEMDAS, packing/unpacking
5. Primitive types – int, float, string,
6. Iterable Types – list, dict, set, tuples
7. Psuedo-code, algorithm design, comments, PEP8
8. I/O, print, stdin, working with files
9. Conditional statements – if/else/elif
10. Loops & Nested Loops – for/while
11. Error handling: try/except
12. Functions
13. Classes, objects, methods
14. Web-apps
15. Web-scraping in Python (demo only)
16. Machine Learning in Python (demo only)

Prerequisites:

- Computer

- Reliable Internet Connection, quite place for meetings
- Intermediate computer literacy.
- Knowledge of command line + text editors.

Expectations:

- Patience: thinking like a computer takes some time getting used to. Don't be alarmed if you don't get it right away.
- Effort: the point of the class is to learn skills - please use your efforts into learning skills
- Attention during class: courtesy to your fellow students.
- Questions: if you're thinking it, odds are someone else is too. Don't be shy.

Delivery Format:

To better accommodate students learning remotely, this course will have two format options for you to choose from. The content and topics will be the same, but will be delivered in different formats. Students registered for either of my sections may choose which format they prefer, and may switch within the first couple weeks of the quarter. There is no need to change your registration; just notify the instructor which format you will be following.

- Asynchronous Delivery: The material will be delivered primarily asynchronously, through a combination of pre-recorded lectures, the online compsci teaching platform, ZYBooks, and the course book. Class meetings will be less frequent, shorter, and will not include additional lectures. Class meeting times will be used for lab work, hands on exercises, and group collaboration. Of course, there will be time for questions on the material and on assignments. **The 2pm Tu/Th section will follow this delivery format.**
- Synchronous Delivery: The material will be delivered primarily through lecture form over Zoom, combined with a course book and selected (limited) Zybooks assignments. The lectures will not be recorded, but lecture notes will be shared on GitHub for download. **The 5:40pm Tu/Th section will follow this delivery format.**
- Both sections will have the same amount of time dedicated to lab work and practical exercises in synchronous meetings.
- Students may choose which format they prefer. (There is no need to change your registration, but you will need to inform the instructor, via Camino form.)
- Students may also switch delivery formats during the first weeks of the term.
- Students will need instructor permission to change delivery format later in the term.

Attendance:

- Attendance to all lectures is mandatory for the Lecture Sync Delivery format. Some Async content will be required as well.
- All Async content is required for the Async Delivery format. Some Sync meetings (lab sessions) will be required as well.
- Group work participation is required for all students for group assignments.
- Participation in the Google Groups forum is required.

Required Textbook:

Mark Lutz
Learning Python, 5th Edition
ISBN-13: 978-1449355739, ISBN-10: 1449355730

PDF version:
https://github.com/MrAlex6204/Books/blob/master/Learning%20Python%2C%205th%20Edition.pdf

Required LMS:

- Sign in or create an account at learn.zybooks.com
- Enter ZYBook code: SCUOMIS30Spring2020
- Subscribe

Grading (Sync Delivery)

Class Participation & Labs/Assignments	10%
ZYBooks Online Work & Labs (Selected Assignments)	5%
Project 1	15%
Project 2 (GROUP PROJECT)	20%
Project 3	20%
Final Project (GROUP PROJECT)	30%
	100%

Grading (Async Delivery)

Lab Participation (Select Meetings)	5%
ZYBooks Online Work & Labs	25%
Project 1	20%
Project 2 (GROUP PROJECT)	20%
Final Project (GROUP PROJECT)	30%
	100%

Grading Policy:

- Assignments will only be accepted late at instructor's discretion (or with valid University excuse).
- Peer review will be incorporated into project grades, per instructor's discretion.
- Extra credit available only at discretion of instructor.
- Instructor reserves the right to replace one project or midterm grade with your final project grade, if your final project grade is higher.
- Grades are subject to Santa Clara University & Leavey School of Business grading guidelines

Projects (for reference, from previous version of OMIS30):

1. Individual project. All doing the same project.
    a. Timeline (tentative):
        i. Assigned: class 4
        ii. Due: class 8
2. Group project. Demonstrating >= 2 concepts. Self-chosen topic.
    a. Timeline:
        i. Assigned: class 8
        ii. Due: class 12
    b. Requirements:
        i. TBD
    c. Examples:

        i. TBD
3. Individual Project. Data Analysis, everyone picks own dataset.
    a. Timeline:
        i. Assigned: class 12
        ii. Due: class 16
    b. Requirements:
        i. Object-oriented
        ii. Functions
    c. Examples:
        i. Buy vs. Rent calculator
        ii. Budgeting tool
        iii. Compare two investments
        iv. Grade calculator for class*
        v. Something on your own
4. Group Project (Final Project). Self-chosen topic.
    a. Timeline:
        i. Assigned: class 16
        ii. Due: Final exam week
    b. Requirements:
        i. Create a web app
        ii. Or, major data science project (with instructor approval)
    c. Examples (from past students):
        i. Create a web app that predicts if a stock is over-/under-valued.
        ii. Create a financial calculator, with a web UI.
        iii. Create a machine learning model based on your data in Project 3
        iv. Create a card game (web app), with web UI

Useful Resources:

- https://www.google.com
- https://www.stackoverflow.com
- https://learnpythonthehardway.org/book/appendixa.html
- http://www.greenteapress.com/thinkpython2/thinkpython2.pdf
- http://interactivepython.org/runestone/static/thinkcspy/index.html
- https://docs.python.org/3/
- https://www.learnpython.org/
- https://www.codecademy.com/learn/python

Tools:

- Terminal (MacOS, Linux) or PowerShell/CMD (Windows)
- VS Code: https://code.visualstudio.com/
- Anaconda (Python 3 distribution): https://www.anaconda.com/download
- PyCharm: https://www.jetbrains.com/pycharm/

Academic Integrity

The Academic Integrity pledge is an expression of the University's commitment to fostering an understanding of -- and commitment to -- a culture of integrity at Santa Clara University. The Academic Integrity pledge, which applies to all students, states:

> *"I am committed to being a person of integrity. I pledge, as a member of the Santa Clara University community, to abide by and uphold the standards of academic integrity contained in the Student Conduct Code."*

Students are expected to uphold the principles of this pledge for all work in this class. For more information about Santa Clara University's academic integrity pledge and resources about ensuring academic integrity in your work, see www.scu.edu/academic-integrity.

Specific to our class:

One of the best coding practices is leveraging previously built code. However, submitting it as your own is plagiarism, and is punishable, even in an academic setting. There will be cases in which you want to leverage others' code. Make sure you have permission, and acknowledge it in your submissions.

Be aware, that while using someone else's code may be faster and easier, it's usually not the best way to learn. Instructor retains the right to penalize submissions which violate the intent of the assignment.

If you use code from the internet, collaborate with another student/s, or incorporate any work that is not your own: CITE YOUR WORK in a comment in that part of your code.

Disabilities Resources

If you have a documented disability for which accommodations may be required in this class, please contact Disabilities Resources, Benson 216, http://www.scu.edu/disabilities as soon as possible to discuss your needs and register for accommodations with the University. If you have already arranged accommodations through Disabilities Resources, please discuss them with me during my office hours within the first two weeks of class.

While I am happy to assist you, I am unable to provide accommodations until I have received verification from Disabilities Resources. The Disabilities Resources office will work with students and faculty to arrange proctored exams for students whose accommodations include double time for exams and/or assisted technology. (Students with approved accommodations of time-and-a-half should talk with me as soon as possible). Disabilities Resources must be contacted in advance to schedule proctored examinations or to arrange other accommodations. The Disabilities Resources office would be grateful for advance notice of at least two weeks. For more information you may contact Disabilities Resources at 408-554- 4109.

Accommodations for Pregnant and Parenting Students

In alignment with Title IX of the Education Amendments of 1972, and with the California Education Code, Section 66281.7, Santa Clara University provides reasonable accommodations to students who are pregnant, have recently experienced childbirth, and/or have medical needs related to childbirth. Pregnant and parenting students can often arrange accommodations by working directly with their instructors, supervisors, or departments. Alternatively, a pregnant or parenting student experiencing related medical conditions may request accommodations through Disability Resources.

Discrimination and Sexual Misconduct (Title IX)

Santa Clara University upholds a zero-tolerance policy for discrimination, harassment and sexual misconduct. If you (or someone you know) have experienced discrimination or harassment, including sexual assault, domestic/dating violence, or stalking, I encourage you to tell someone promptly. For more information, please consult the University's Gender-Based Discrimination and Sexual Misconduct Policy at http://bit.ly/2ce1hBb or contact the University's EEO and Title IX Coordinator, Belinda Guthrie, at 408-554-3043, bguthrie@scu.edu. Reports may be submitted online through the Office of Student Life https://www.scu.edu/osl/report/ or anonymously through EthicsPoint https://www.scu.edu/hr/quick-links/ethicspoint/

In-Class Recordings

The Student Conduct Code (p. 13) prohibits students from "(m)aking a video recording, audio recording, or streaming audio/video of private, non-public conversations and/or meetings, inclusive of the classroom

setting, without the knowledge and consent of all recorded parties," except in cases of approved disability accommodations. The Student Conduct Code also prohibits the "falsification or misuse, including non-authentic, altered, or fraudulent misuse, of University records, permits, documents, communication equipment, or identification cards and government-issued documents." Dissemination or sharing of any classroom recording without the permission of the instructor would be considered "misuse" and, therefore, prohibited. Violations of these policies may result in disciplinary action by the University. At the instructor's discretion, violations may also have an adverse effect on the student's grade.

Wellness Statement

Santa Clara University is a Jesuit Institution wherein the value of cura personalis, translated to care for the whole person, holds a place of incredibly high importance. Caring for oneself in both a physical and mental sense is paramount to a student's ability to live an enjoyable life at Santa Clara University, excel in academia, and reach their full potential in all aspects of their personhood.

- Students should always strive to get an appropriate amount of sleep each night; the recommended amount of sleep for adults ages 18-25 is 7-9 hours.
- Visit the Wellness Center's (currently located at 852 Market Street) website to see what resources are available on campus to aid and promote student well-being at https://www.scu.edu/wellness/.
- Students are given six free counseling sessions with Counseling and Psychological Services — it is highly encouraged you utilize these sessions should you find yourself in need of someone to talk to about anything at all. The number to make an appointment with CAPS is (408) 554-4501. Visit the Counseling and Psychological Services website to learn more about these sessions and more at https://www.scu.edu/cowell/caps/.
- If you are sick, please check in with your professor regarding your ability to attend class or lack thereof. By continuing to attend class while feeling sick, you are not only harming your own health, but likely the health of those around you as well. If you are feeling ill, we advise you visit Cowell Health Center during the operating hours of 8:30 am to 5:00pm, Monday through Friday. Visit the Cowell's center website to learn more about the various services this health center provides at https://www.scu.edu/cowell/.