

ECON 3322/5322: OPEN SOURCE PROGRAMMING WITH PYTHON FOR ECONOMISTS

Spring 2023

| | | | |
|--------------------|--|---------------|-----------------------|
| Instructor: | Sung Hoon Choi | Time: | TuTh 9:30AM – 10:45AM |
| Email: | sung_hoon.choi@uconn.edu | Place: | OAK 308 |

Teaching Assistant: Kunze Li (kunze.li@uconn.edu)

Office Hours: Wednesday 1:30 - 3:00, OAK 336B.

Course Description: This course is all about learning the basics of the Python programming language, even when you have little or no programming experience. Python is a popular programming language used for software development, web development, mathematics, finance, and across disciplines in many ways. It can help you in your own work or research, or you can use it just for fun. This course will teach you introductory skills for Python programming and provides you with the necessary knowledge and experience to read and write code. You will gain solid foundations in Python programming and will be confident you can apply these skills to your specific domain of interest. And you will have fun solving many problems.

Course Website: The HuskyCT website, <https://lms.uconn.edu/>, contains all the information for this course, including lecture notes, reading assignment, references, homework, projects, updated syllabus, as well as supplemental material and exercises.

Main References: There is no need to spend money on (generally) expensive textbooks, since a lot of the information, references, and material for this course are available free online.

- Use Python documentation and tutorials from: <https://www.python.org/>
- Use any tutorials and information on the web. Just be aware that the python language and syntax evolves (albeit slowly), so that material written for older versions of Python sometimes do not work properly for the most current version of python.
- There are a lot of free resources available online that can help you apply Python. I recommend you use Google and Stackoverflow <https://stackoverflow.com/questions/tagged/python> to enhance your view on programming and Python.

Objectives:

1. Read and write simple Python programs. Recognize the structures used in these programs, and explain how they work.
2. Solve basic problems by writing a Python program. Execute Python programs on your computer, using Jupyter notebook.
3. Be familiar with a number of Python libraries for graphing, math, and for basic data analysis, and incorporate the use of these libraries in your Python programs.
4. Know where and how to look for help when you need it.

Prerequisites: While familiarity with computers is expected, **no** programming skill/knowledge is required for this course. I expect that you should have at least: (1) an introductory “ECON 101” class; (2) one to two terms of calculus; and (3) an elementary course in matrix algebra and econometrics/statistics course (e.g., linear regression analysis), or a willingness to learn the basics on your own.

Class Policy: Regular attendance is essential and expected.

Grading Policy: Participation (10%). Homework (25%). Midterm (30%). Final Exam/Project (35%).

Grading Scale: On a 100 point basis, here are all the cut-offs applied to get “final letter grade”.

| Letter Grade | A | A- | B+ | B | B- | C+ | C | C- | D | F |
|--------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|------|
| Grade | [90, 100) | [85, 90) | [80, 85) | [75, 80) | [70, 75) | [65, 70) | [60, 65) | [55, 60) | [50, 55) | 50 – |

Due Dates and Late Policy: All due dates and deadlines will be clearly announced in the class. The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner. Late policy is that any submission later than the due dates or deadlines will receive a late penalty on the grades.

Tentative Course Outline:

- Week 1. Introduction. Installing Python.
- Week 2. Basics in Python. Collections
- Week 3. Conditionals, Iteration
- Week 4. Functions and its applications
- Week 5. Arrays and the NumPy library
- Week 6. Plotting with Matplotlib library. Linear Algebra basics with Python.
- Week 7. SciPy
- Week 8. Review and Midterm Examination.
- Week 9. Dataframes and the Panda library
- Week 10. Applications to finance.
- Week 11 and 12. Regression analysis. Scikit-learn. Probability basics with Python.
- Week 13. Handling large datasets. Applications. Brief introduction to machine learning.
- Week 14. Review and Final Exam/Project.

Important Dates:

Midterm TBA
 Final Project TBA

NOTE: The format of midterm exam is to finish a small project independently. Final project is to finish a project on some topic chosen by the students themselves. Details and instructions will be discussed in class.

Academic Integrity: Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

Students with Disabilities: The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.