STAT 2255: Statistical Programming

1 Course Information

- Time and Location
  - Time: **TuTh 9:30AM-10:45AM**
  - Location: **JONS 229**
- Instructor: **Jiarui Liu**
  - Office Hours: **Th 11:00AM - 12:00PM, AUST 337**, or by appointment
  - Email: **jiarui.2.liu@uconn.edu**
- Grader: Ran You
  - Email: **ran.you@uconn.edu**
- Prerequisite: MATH 1132Q, or instructor consent.

2 Course objectives

Introduction to statistical programming via Python including data types, control flow, object-oriented programming, and graphical user interface-driven applications such as Jupyter notebooks. Emphasis on algorithmic thinking, efficient implementation of different data structures, control and data abstraction, file processing, and data analysis and visualization.

3 Python

An easy way to setup Python is to use conda by installing miniconda or anaconda. Here is are some comparisons betwteen the two distribution anaconda vs miniconda.

4 Grading

Category	Weight
Homework	30%
Midterm	30%

Final	40%

5 Exams

The midterm exam will be held in class on Thursday, and the final exam will be held at UConn scheduled time and location. They are closed book and closed notes. **No Make-up Exams!** The following is tentative exam schedule.

6 Homework:

Unless stated, homework should be submitted through HuskyCT. Homework submissions **must contains a .pdf file** along with .ipynb, .md, or .py format.

Late submissions within the 2-day grace period will only be worth 50% - 95% of the points. Submissions beyond 2 days will not be graded and will receive no credit. No homework grade will be dropped.

6.1 Generate pdf files

You need pandoc and xelatex to export pdf files from jupyter book. Here are two solutions.

6.1.1 Print the webpage

This is a ad hoc solution, but it is easier. Adjust the width of your browser to make the pdf print look better.

6.1.2 Install pandoc and xelatex

- Download and install pandoc here. Choose the .pkg version for Mac and the .msi version for Windows.
- Download and install MiKTeX (better with Windows) or MacTeX (Mac only).
- You may need to restart your anaconda prompt and/or shell for the two newly installed software to work.
- With MiKTeX the fist time you export a pdf file, you need to wait for a while, because it needs to fetch necessary packages online.

7 Material coverage (subject to change)

1. Virtual Environment, Markdown (maybe Git and GitHub)
2. Object Types and Statements
3. Modules
4. Object-Oriented Programming
5. Testing and Exception Handling
6. Running Time Analysis
7. Root Finding
8. Pandas
9. Data Visualization and Hypothesis Testing
10. Random Variable Generation

8 References

1. Devroye, Luc. (2013). Non-Uniform Random Variate Generation. Springer-Verlag.
2. Lutz, Mark. (2013). Learning Python: Powerful Object-Oriented Programming. United States: O'Reilly Media.
3. McKinney, Wes. (2013). Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython. O'Reilly Media. ISBN: 9789351100065.
4. Sheehy, Donald R. (2022). A First Course on Data Structures in Python.

8.1 Two quick reference cards

- Python 3 – Quick Reference Card
- Python cheatsheet

8.2 Python exercises with sample solutions

- Python Exercises, Practice, Solution

8.3 Python Tutor

- https://pythontutor.com/visualize.html

9 Academic Integrity

A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned. Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, and examinations); any attempt to influence improperly (e.g. bribery, threats) any member of the faculty, staff, or administration of the University in any matter pertaining to academics or research; presenting, as one's own,the ideas or words of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved. A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code.

10 Support Services

- Counseling and Mental Health Services 486-4705 (after hours, use 486-3427)
- Career Services 486-3013
- Alcohol and Other Drug Services 486-9431
- Dean of Students Office 486-3426
- Center for Students with Disabilities 486-2020 (voice), 486-2077 (TDD)
- Online Course Support: https://achieve.uconn.edu/online-course/
- Keep Learning: https://onlinestudent.uconn.edu/keeplearning/

11 Disclaimer

The instructor reserves the right to make changes to the syllabus as necessitated by circumstances.