GLY4930 Course Syllabus
Python programming for geoscientists

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Time: Daily, 10-12 from July 1- July 18, 2025
Office hours: TBD

Welcome to GLY4930, Python programming for geoscientists!
This course introduces students to programming in Python with a focus on applications in the geosciences. No prior coding experience is necessary. This course is ideal for students who want to learn to code but don’t know where to begin. Students will learn fundamental programming concepts, including variables, data types, conditionals, loops, functions, and file handling, as well as how to work with scientific libraries like NumPy, pandas, and matplotlib. Emphasis will be placed on writing clean, reproducible code and developing problem-solving skills relevant to Earth science data and questions. We will meet daily for two weeks for a combination of lecture, discussion, and coding activities.

Course objectives:
By the end of this course, students should be able to:

- Write basic Python scripts to read, process, and visualize data.
- Use core programming constructs such as loops, conditionals, and functions.
- Work with geoscientific datasets using libraries such as NumPy and pandas.
- Understand and apply good coding practices, including documentation and debugging.

Prerequisites: None. A geology background is not necessary for taking this course. Students from all departments are welcome!

Materials: The assignments will require a computer for completion.

Textbooks: No textbooks are required.

Assignments and grading:

Your grade in this course will be determined by how you do in 8 programming assignments worth 10 points each, participation (1 point each day), and a final project worth 20 points. The final project will involve making a demo and assignment for a Python package. There will be no exams. Assignments will be marked down one point per late day. There is no extra credit offered in this course.

Grading scale:

For information on how UF assigns grade points, visit: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

A	94 – 100%		C	74 – 76%
A-	90 – 93%		C-	70 – 73%
B+	87 – 89%		D+	67 – 69%
B	84 – 86%		D	64 – 66%
B-	80 – 83%		D-	60 – 63%
C+	77 – 79%		E	<60

Schedule:

Day 1	Course overview, environment setup in Google Colab
Day 2	Working with data part 1 (importing data types, indexing)
Day 3	For loops and conditional statements
Day 4	Introduction to NumPy and Pandas. Project assignments.
Day 5	Python installation. Working with files in Jupyter
Day 6	Data visualization with Matplotlib part 1 (line, scatter, histogram plots)
Day 7	Debugging and documentation.
Day 8	Working with data part 2 (data analysis, data cleaning)
Day 9	Defining functions and making simple models.
Day 10	Data visualization part 2 (customizing plots, making map figures)
Day 11	Project work time.
Day 12	Matrix operations and vectorization.
Day 13	Final project presentation and demos.
Day 14	Wrap up

Attendance Policy

Requirements for class attendance and make-up assignments and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx. Personal travel plans are not excused absences. Forgetting to come to class is also not an excused absence.

Attendance is essential for completing the assignments. Some assignments will be completed in class. When possible, reasonable notice is required if you are unable to attend class so that we know to record the lecture and can create a makeup assignment, if applicable. The sooner you contact the instructors, the more options we can offer you. Extensions and makeup assignments will not be considered if the instructors are not contacted until after the deadline or class, except under special circumstances. Assignments will be marked down one point for every late day. All due dates/time zones are based on the time zone on campus.

Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

UF Religious Observances Policy

Students upon **prior** notification of their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith. Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence. Students shall not be penalized due to absence from class or other scheduled academic activity because of religious observances. The UF Religious Holidays Policy is available at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#religiousholidaystext.

Professionalism and communication

Professionalism and collegiality are important in the scientific community and make for better collaborations. Be respectful of your classmates, support each other, and try not to dominate the conversation or interrupt others. Approach different viewpoints with curiosity, not judgment. Be courteous in your communication with your classmates and instructors. In an increasingly online world, it's easy to digitally say things that we don't mean. So be mindful not to say anything over email that you wouldn't say in person. You may address the instructor as Mickey or Dr. MacKie (not Ms. MacKie). You may communicate with the instructors over Canvas or email. The instructor will typically respond within an hour during work hours (M-F 9-5) but will not necessarily be available outside of these hours.

Honor code:

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Click here to read the Conduct Code. If you have any questions or concerns, please consult with the instructor or TAs in this class.

In-class recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

AI Policy

AI tools such as ChatGPT are now widely used. You are encouraged to learn more about their strengths and limitations. We do not prohibit the use of AI tools in this course. In fact, ChatGPT can be very useful for debugging code or checking for grammatical errors. However, we caution students against relying too heavily on these tools for writing. ChatGPT does not write at the level of precision required in academia, and it is not well-versed in the content in this course. You are responsible for taking ownership of the quality of your work - whether or not you use AI. We will not check assignments for ChatGPT origins. Ultimately, assignments will be graded solely on quality according to their rubrics.

UF Evaluations Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Campus Resources:

- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care.
- website to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center*: Visit the Counseling and Wellness Center.
- or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.
- *University Police Department*: Visit UF Police Department website.
- or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center*: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website .
- *GatorWell Health Promotion Services*: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website.
- or call 352-273-4450.

Academic Resources

- *E-learning technical support*: Contact the UF Computing Help Desk.
- at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- *Career Connections Center.*

- : Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- *Library Support*.
- : Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center*.
- : Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.
- *Writing Studio*.
- : 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- *Student Complaints On-Campus*: Visit the Student Honor Code and Student Conduct Code webpage for more information.