Introduction to Python for Physical Sciences

I. Course Information

AST 2730
Semester 2023 Spring
Meeting Day/Time: Tuesday 9:35 AM – 10:25 AM, Thursday 9:35AM-11:30AM
Location: CSE E119

Instructor

Prof. Jason Dittmann
Email: JasonDittmann@ufl.edu
Office location: BRT 210
Office hours: Mondays 2 pm – 4pm
Office hours location: BRT 210. Alternatively, we can meet remotely on zoom by request/arrangement.

The preferred method for contacting the instructor outside of class and office hours is via the canvas messaging system.

Course Description

Modern science is increasingly enabled by efficient, careful, and detailed analysis of computational/experimental data. This course will aim to introduce students to python programming with special emphasis on physical science implications. This course is designed to introduce students with no background in programming to python and enable them to feel empowered to develop codes to solve everyday problems.

Course Materials

The course will be taught based on course notes and some combination of the following books:

- *Python Data Science Handbook,* O'Reilly Media, VanderPlas, ISBN: 9781491912058 ○ The full text of this book is freely available online at
https://jakevdp.github.io/PythonDataScienceHandbook/
- *Python Programming and Numerical Methods: A Guide for Engineers and Scientists,* Academic Press, Kong, Siauw, & Bayen, ISBN: 9780128195499 ○
The full text of this book is freely available online at
https://pythonnumericalmethods.berkeley.edu/notebooks/Index.html

Statement on Materials and Supplies Fees

N/A

II. Schedule & Coursework

Weekly Course Schedule

Week	Topic	Note
Week 1	variables, data type, expressions, operators	
Week 2	lists, tuples, strings, dictionaries	MLK day Monday
Week 3	if statement, for/while loops, exception	
Week 4	arrays and numpy	
Week 5	function	
Week 6 & 7	modules	Home coming day
Week 8	data input/output	
Week 9	data visualization	midterm
Week 10 & 11	Class	Week 10 Spring Break
Week 12	pandas	
Week 13 & 14	scipy	
Week 15	astropy	
Week 16	review	

List of Graded Work

Work	Description	Points
Homework Assignments	Homework assignments consist of comprehension questions and mini-coding problems. Homework assignments will ask students to apply the concepts and techniques from the lecture and readings, with a goal of assessing student comprehension. Homework assignment sets will be graded for accuracy. All homework assignments must be submitted through the canvas website.	50
Exams	There will be two exams during the course: a midterm exam and a final exam. The exams will be closed book and closed notes. The tests are designed to assess student comprehension of the concepts covered in the course, and will feature topics from lecture and homework assignments. Exams will be graded for accuracy.	50

The course canvas site will make clear all assignment dates and deadlines. Any questions about deadlines should be directed to the instructor, ideally through the course Discussion pages.

III. Grading

Statement on Attendance and Participation

Attendance and Participation:

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

- Attendance itself is not a graded component of this class. Nevertheless, critical information will be disseminated through our class meetings. Thus, students are expected to either attend class, or otherwise obtain the material discussed during class.
- All assignments are due at 5 p.m. on the assigned due date unless noted otherwise. Students must submit completed assignments via canvas in the format specified in the assignment. Unexcused late assignments will be accepted with 20% of deduction in earned points per day, with a maximum of 5 days late. A documented reason that qualifies under UF's approved/excused absences must be provided for excused late assignments.

Grading Scale

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

A	90 – 100%		C	70 – 73.99%
A-	87 – 89.99%		C-	67 – 69.99%
B+	84 – 86.99%		D+	64 – 66.99%
B	80 – 83.99%		D	60 – 63.99%
B-	77 – 79.99%		D-	57 – 59.99%
C+	74 – 76.99%		F	<56.99

IV. Using HiPerGator Resources

Students may use HiPerGator resources for homework. Students that need to access HiPerGator for course-related activities should ensure that they are properly registered in their course. Those who already have HiPerGator accounts will be added to the class group; the rest will have a temporary HiPerGator account created for them to use for the class. Students who join the class late should remind their instructor to send Research Computing a request to add them to the class.

Note that class accounts will expire (and any associated data deleted) two weeks after the "Classes End" date listed for the semester: UF Catalog: Dates & Deadlines.

V. Required Policies

Students Requiring Accommodation

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://disability.ufl.edu/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

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/.

University Honesty Policy

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 Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

The Writing Studio

The writing studio is committed to helping University of Florida students meet their academic and professional goals by becoming better writers. Visit the writing studio online at http://writing.ufl.edu/writing-studio/ or in 2215 Turlington Hall for one-on-one consultations and workshops.

Privacy Considerations for Remote/Recorded Lectures

Should there be circumstances remote/recorded lectures are given, the following policy will be applied.

When course meetings are being recorded, students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited. Specifically, you may not video record, audio record, screen shot, or otherwise record any course meetings. Nor may you share any recorded material from class (legitimate course recordings, or otherwise). Uniform adherence to this policy is critical to ensuring a safe and academically engaging environment. Violations of this policy will be immediately escalated to the Dean of Student Affair's office.