

Python Programming for Engineers

COP 2273 Section EED3

Class Periods: M| Period 3 (9:35AM-10:25AM),
W| Period 2-3 (8:30AM-10:25AM)

Location: PSY 0151

Academic Term: Fall 2024

Instructor:

Rui Guo, Ph.D.

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Office Location: 515 Weil Hall

Office Hours: TBA via Canvas

Peer Mentor/grader:

TBA on Canvas

Course Description

Introduction for those who have little experience in programming and have been looking to obtain hands-on learning experience in the Python programming language. This course encourages developing problem solving and computational thinking skills in engineering fields and emphasizes a reasonably high degree of mathematics. (3 credits)

Course Pre-Requisites / Co-Requisites

MAC 2311 - Analytic Geometry and Calculus 1 with a C grade or better

Course Objectives

The main objective of this course is to provide a foundation in programming for engineering problem solving using Python. Students will develop the skills to implement computational solutions to a wide range of engineering problems. Furthermore, students will be able to apply these skill sets to other programming languages.

Materials and Supply Fees

Not applicable

Relation to Program Outcomes (ABET)

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3. An ability to communicate effectively with a range of audiences	Low
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Medium
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Medium
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Low
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	High

*Coverage is given as high, medium, or low.

Required Textbook

- **Title: Murach's Python Programming**
 - by Michael Urban & Joel Murach (April 2021, 2nd ed), ISBN: 978-1943872749

Required Software: Python IDLE, Visual Studio Code, Google Colab

Recommended Materials

- **Python Programming: An Introduction to Computer Science**
 - by John Zelle (2016, 3rd ed), ISBN: 978-1590282755
- **Python Programming and Numerical Methods: A Guide For Engineers And Scientists.**
<https://pythonnumericalmethods.studentorg.berkeley.edu/notebooks/Index.html>
- Codio platform for Python (<https://www.codio.com/>): ask the instructor for specific link

Course Schedule

Week 01 (08/22 – 08/28):	Introduction --Running a Python Program
Week 02 (08/29 – 09/04):	Python Basics / Ch2
Week 03 (09/05 – 09/11):	Control Statements / Ch3
Week 04 (09/12 – 09/18):	Functions and Modules / Ch4
Week 05 (09/19 – 09/25):	Lists and Tuples / Ch6
Week 06 (09/26 – 10/02):	Debugging /Ch5, Review / Exam 1
Week 07 (10/03 – 10/09):	Strings / Ch10, Project 1 (posted)
Week 08 (10/10 – 10/16):	Exceptions, Numbers /Ch8, Ch9
Week 09 (10/17 – 10/23):	Dictionaries / Ch12
Week 10 (10/24 – 10/30):	Classes / Ch14
Week 11 (10/31 – 11/06):	Inheritance / Ch15
Week 12 (11/07 – 11/13):	Review / Exam 2
Week 13 (11/14 – 11/20):	File I/O / Ch7, Project 2 (posted)
Week 14 (11/21 – 11/27):	Data File, <i>Thanksgiving Break</i>
Week 15 (11/28 – 12/04):	Basic Data Science, Wrap-up

Attendance Policy, Class Expectations, and Make-Up Policy

Regular attendance with a personal laptop is expected. Students are responsible for monitoring all the course materials and notifications from the course website Canvas (ufl.instructure.com). Weekly quizzes will happen in class, **you must be present in the classroom to take the quiz.** Access to the quiz without being present in class will carry a UF Honor code violation. The iClicker, equipped with the location function, will be used to verify students' attendance in class. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Make-Up Policy

Makeups for exams, homework assignments, and in-class assignments are NOT normally allowed. If you cannot attend an exam, you must contact the instructor well in advance (at least 7 days before an announced exam date). Failure to contact the instructor prior to the exam will result in a zero. **Please also note that late submission of an exam, homework assignment, or in-class assignment will result in a zero.** Arrangements will be made for students on a case-by-case basis for excused reasons. It is every student's responsibility to honor and respect the given deadlines posted on the Canvas course site (<https://elearning.ufl.edu>).

Evaluation of Grades

All assignments are assigned through the Canvas course site. **Please note that the deadlines are strictly enforced.** For example, if the deadline is 11:59 PM, any assignment submitted after this time is considered late. It is also each student's responsibility to submit correct files and ensure the submission is successful before the deadline (please double check your Canvas submissions). If you are unable to submit your assignment through Canvas, send a copy of your assignment to your instructor **BEFORE** the stated deadline. There will be **two projects**

and **two exams**. The two exams will be cumulative with an emphasis on the most recently covered material. Details will be posted on the Canvas course site (<https://elearning.ufl.edu>).

	Total Points	Percentage of Final Grade
Weekly Coding Exercises	100 each	10%
Weekly Quiz	10 each	10%
Weekly Lab Assignments	100 each	25%
Short Homework Assignments	10 each	8%
Exam 1	100	16%
Exam 2	100	16%
Projects (2)	100 each	15%
		100%

Grading Policy

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

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.

Course Evaluation

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/>.

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 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.

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://sccr.dso.ufl.edu/process/student-conduct-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.

Academic Dishonesty

- **Sharing or copying of code** through any medium such as email, text, snapchat etc., and plagiarism, in addition to other dishonest behaviors, are all considered to be academic dishonesty. No information regarding the solutions of assignments and exams may be shared by students.
- Collaboration (helping others at a conceptual level through discussions) is highly encouraged in the course. However, **looking at any piece of your peer’s code, sharing files, searching for solutions found online, or using someone else to code your solution is strictly prohibited.**
- Any student found to have violated these rules, **whether a provider or receiver of unauthorized help**, will be given a zero on that assignment and will be reported to the Honor Court. Additional penalties like grade deduction may be applied depending on the severity of the case. If you aren’t clear on what constitutes plagiarism, **ask the course instructor.**
- NOTE: Students will have the opportunity to inform the instructor in case they take any unauthorized help for a particular assignment **within 24 hours of the submission deadline.** In such a case they will receive no credit for that assignment and no further action will be taken.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.