

COURSE SYLLABUS
ESI 4610: Introduction to Data Analytics
Fall 2025 | Sections 77AM & 77PM

Instructor: Dr. Murwan Siddig (msiddig@ufl.edu)

- **Office:** Weil Hall 380.
- **Phone:** (352) 294-7713.
- **Office Hours:** Tuesdays between 04:00pm-06:00pm or by appointment.
Zoom link is available through the Zoom Conferences tab on Canvas.

Graders: TBD

Course Logistics: The course takes place on Mondays, Wednesdays and Fridays according to the following schedule:

Section	Time	Day	Location
77AM	08:30am - 09:20am (Period 2)	MWF	WEIM 1084
77PM	11:45am - 12:35pm (Period 5)	MW F	NZH 0112 FLG 0270

All course materials, information, and announcements will be communicated through the course website on Canvas via elearning.ufl.edu.

Course Description: Provides a basic understanding of the skills necessary for managing and analyzing data. The concepts covered include exploratory data analysis, data manipulation, data cleaning, data wrangling, and machine learning models. A basic understanding of data management with SQL is also provided. All the technical skills will be motivated by different examples involving data. Python is the programming language used. (3 [credits](#)).

Course Objectives: The goal of this course is to provide students with the necessary skills to manage and analyze data. Through practice problems and hands-on assignments, students will learn structured programming, algorithmic thinking, data manipulation, among other concepts and tools that are essential for data analytics. By the end of the course, students will be able to apply these skills to real-world problems and datasets.

Course Format: In-person on campus. No hybrid or online options are available.

Pre-Requisites / Co-Requisites: COP 2271 (or COP 2273 or COP 2332C) with a minimum grade of C and ESI 3215C with a minimum grade of C.

Relation to Program Outcomes (ABET): This is a course with significant design content. Throughout the semester, students will complete a team project expected to meet specific design criteria. This course supports the ISE undergraduate program educational objectives of producing graduates who

- “will be successful professionals in industrial and systems engineering or other disciplines”,
- “can acquire advanced knowledge through continuing education or advanced degree programs”,
- “can become active leaders in their profession and/or community”,

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	Medium
3. An ability to communicate effectively with a range of audiences	
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	
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	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium

Materials and Supply Fees: None.

Required Textbook: None.

Required Technology:

- You must have a laptop to sign up for this course. The laptop is necessary for in-class exercises, homework assignments, and exams. Please refer to the [University student computing requirement](#) for more information.

Recommended Resources:

- Downey, Allen. *Think Python*. O'Reilly Media, Inc., 2012.
<https://greenteapress.com/wp/think-python-2e/>
- McKinney, Wes. *Python for data analysis: Data wrangling with Pandas, NumPy, and IPython*. O'Reilly Media, Inc., 2012.
<https://wesmckinney.com/book/>
- Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, *An Introduction to Statistical Learning: With Applications in Python*, 2023. ISBN 978-3-031-38747-0. Free version: <https://www.statlearning.com>.
Repository with Python code: https://github.com/intro-stat-learning/ISLP_labs

Tentative Course Schedule: The following is a tentative schedule of topics to be covered in this course. The schedule is subject to change based on the progress of the class and at the discretion of the instructor. Any changes will be announced in class and on Canvas.

Week	Module	Topic	Assignment	Due
1	Analytics Tools	Python Basics	Homework 1	
2		Control Flow	Homework 2	Homework 1
3		Modules	Homework 3	Homework 2
4		Version Control	Exam 1 Prep	Homework 3
5	Data Wrangling	Data Collection	Homework 4	Exam 1
6		Data Cleaning	Homework 5	Homework 4
7		Data Transformation	Homework 6	Homework 5
8		Data Visualization	Exam 2 Prep	Homework 6
9	Machine Learning	Regression I	Homework 7	Exam 2
10		Regression II	Homework 8	Homework 7
11		Classification I	Homework 9	Homework 8
12		Classification II	Homework 10	Homework 9
13		Clustering	Exam 3 Prep	Homework 10
14	Thanksgiving Break (No Class)			
15	Review			Exam 3

Evaluation of Grades: The final grade will be based on the following distribution:

Homework	20%
Exam 1	30%
Exam 2	30%
Exam 3	20%

Grading Policy: The (tentative) grading scale is:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
[94, 100]	[90, 94)	[86, 90)	[83, 86)	[80, 83)	[77, 80)	[73, 77)	[70, 73)	[67, 70)	[63, 67)	[60, 63)

A grade of C is required to pass this class. A C- is not considered passing. The grades may or may not be curved, depending on the overall performance of the class. More information on UF grading policy may be found at: [UF Undergraduate Catalog](#) and [Grades and Grading Policies](#).

Exams: The following are the tentative dates for the exams:

Section	Exam	Date	Time	Location
77AM	Exam 1	Wednesday, September 24, 2025	TBD	TBD
	Exam 2	Wednesday, October 29, 2025	TBD	TBD
	Exam 3	Wednesday, December 03, 2025	TBD	TBD

The exams will be held in-person (no online option). The exams will be closed-book, but each student is allowed to bring in one sheet of 8.5*11.0 inches paper of handwritten notes and a calculator. No collaboration is allowed in any form during the exam. Lending/borrowing a calculator, sharing notes, etc., are not allowed. More detailed information about the exam will be communicated through Canvas before the exam dates.

Exams Make-Up Policy: If you are unable to take an exam due to a family or medical emergency, and you notify the instructor in advance of the exam, then a make-up exam will be organized as soon as it is feasible for both you and the instructor. Requests for make-up exams should be made at least a week before the exam date. Make-up exams will not be given for any other reason, including travel plans, work commitments, or other personal reasons. If you miss an exam without prior notice, you will receive a grade of zero for that exam.

Regrade Policy: A student may request a regrade of their assignments and exams. Only one regrade will be considered per assignment/exam. The deadline for requesting a regrade is two weeks after the graded work is returned to the class, even if you were not present that day. Any grade dispute/inquiry after the specified period will not be considered. The request for regrading must be done in writing together with a detailed description of the reasons why you believe there was a mistake in your grade.

Homework assignments: All assignments should be submitted online through Canvas (paper submissions will not be accepted). All assignments are due when class begins on the assigned due date. Each student is allowed a budget of *THREE FREE days* for late assignment submissions for the entire semester. A student who uses all their free days will have their grade reduced by 33.33% for each day delayed. No assignments will be accepted if more than *THREE* days are overdue, regardless of whether free days are applied or not.

Collabration Policy: You are allowed to discuss assignment problems with other students in the class, but you *cannot* share complete answers, code, or simulation results before everyone involved in the discussion has submitted their work. Violation of this policy will be considered a violation of the [University Honesty Policy](#) and will be reported to the appropriate university authorities.

Online Resources Policy: You are allowed to refer to online resources, tools, and artificial intelligence (AI) software, such as [ChatGPT](#). However, you must obey the following rules:

- You must ensure the factual accuracy of the information you use from these sources.
- You must properly attribute your sources for each problem for which you use online resources. Below is an example of citing ChatGPT:

“How do I cite ChatGPT?” prompt. ChatGPT (version GPT-4o), 22 Aug. 2025. OpenAI, <https://chatgpt.com/>.

- You must write your own code and solutions. Copying and pasting code from on-line sources is not allowed.
- You must be prepared to explain your work to the instructor or Grader if asked.

Violation of this policy will be considered a violation of the [University Honesty Policy](#) and will be reported to the appropriate university authorities.

Other Policies and Information

Academic Policies & Resources: The University of Florida has a number of academic policies and resources. Please refer to the following links for more information: <https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/>

Class Materials: Any material that gets distributed to the class should be kept strictly within this class. Students are not allowed to share course materials with anyone outside the class.

Commitment to a Safe and Inclusive Learning Environment: The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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 Program Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.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@ufl.edu

Software Use: All faculty, staff, and students of the University of Florida 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 the [Notification to Students of FERPA Rights](#) and visit registrar.ufl.edu/ferpa.

Land Acknowledgement: A [land acknowledgement](#) is a formal statement that recognizes and respects Indigenous Peoples as traditional stewards of this land, as well as their enduring relationship with it. Specifically, the University of Florida is located on the [traditional territory](#) of the [Potano](#) (part of the [Timucua](#) people) tribe, and later lived on by [Seminole](#) tribes. We are not only recognizing and reflecting on the context in which our (land grant) institution of higher learning exists, but also identifying an ongoing process of marginalization and colonialism. I encourage you to read the history of Indigenous Peoples and consider what you can do to support current indigenous populations. The significance of a land acknowledgment is summarized at nativegov.org/news/a-guide-to-indigenous-land-acknowledgment.