FLORIDA POLYTECHNIC UNIVERSITY

Course Syllabus

Course Information

- **Course Number and Title**: ISC 2310 – Python for Data Analytics
- **Credit Hours**: 3 credits
- **Current Academic Term**: Spring 2026
- **Class Meeting**: TR – 01:00 PM – 02:15 PM (IST-1044)

Instructor Information

- **Instructor**: Dr. Parisa Hajibabaee
- **Office**: BARC-1107
- **Office Hours**: TR– 11:00AM -12:00 PM, T– 2:30 -3:30 PM or by appointment
- **Office Phone**: 863-874-8559
- **E-mail**: phajibabaee@floridapoly.edu

Course Details

- **Delivery Mode**: This course will be delivered face-to-face in room **IST-1044**. Please check the Canvas course website for all information, including announcements, discussions, assignments, quizzes, and supplementary material for topics covered in this course.

- **Course Website:** https://floridapolytechnic.instructure.com/courses/10086

- **Official Catalog Course Description**:
  Python is one of the most important programming languages in the field of data analytics, and its libraries for analysis and modeling are modern relevant tools to solve scientific problems. In this course students learn the basics of programming with Python with a focus on fundamental libraries for data science and analytics such as NumPy, Pandas, and Matplotlib. Students will use Anaconda and Jupyter notebooks for coding.

- **Prerequisites:** N/A

- **Gordon Rule (6A-10.030):** No.

- **Required Textbooks**:
  - **Title:** Python for Data & Analytics-A Business-Oriented Approach
  - **Author:** Daniek H. Groner
  - **Edition:** 1.0
  - **ISBN (eTextbook):** 978-1-943153-98-5
  - **ISBN (Printed Paperback):** 978-1-943153-99-2
  - **Publisher:** Prospect Press
  - **Availability:** eTextbook available from Redshelf and VitalSource; printed paperback available from Redshelf.
  - **Copyright:** © 2023 Rose River Software, LLC. All rights reserved.

STUDENT ORDERING INFORMATION

Python for Data & Analytics A Business-Oriented Approach, Edition 1.0

- by Daniel H. Groner
- Prospect Press
- Copyright 2023

- eTextbook:
- ISBN: 978-1-943153-985
- Student Price: $57.85
- Available from:
- - RedShelf
- - VitalSource

- Paperbacks:
- ISBN: 978-1-943153-992
- Student Price: $93.85 (+ shipping)
- Available from RedShelf.

- ***Direct links to online retailers are available at the publisher's website here:***
- https://www.prospectpressvt.com/textbooks/groner-python
- Scroll just past the green "Ordering Information" Bar and you will find direct links to the book at VitalSource and RedShelf.

- ***Or go directly to our online retailers:***
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- - Or use this link for the title's ordering page and choose the format you want: https://redshelf.com/app/ecom/book/2160787/
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- - Or use this link for the title's ordering page: https://www.vitalsource.com/products/python-for-data-amp-analytics-a-business-oriented-daniel-h-groner-v9781943153985
- - The VitalSource eBook provides 365-day online access and a perpetual download.
- - VitalSource does not provide a printed option.

Supplementary book:
"Python for Data Analysis: Data Wrangling with Pandas, Numpy, and iPython" by Wes McKinney, 2nd Edition, ISBN: 978-1449319793

- **Equipment and Materials**: We will use Google Colab, the **Anaconda** data science platform, and **Jupyter Notebook**. All are free.

Anaconda can be downloaded for free through the following link: https://www.anaconda.com/

- **Course Objectives**:
  Students will learn the fundamental concepts of Python programming and how to use the most crucial python libraries for data science.

- **Instructional Methods:**
  This course is delivered in face-to-face format. Please check the Canvas course website for all information, including announcements, discussions, and any supplementary material for topics covered in this course.

- **Course Learning Outcomes**:

  1. **Apply** the concepts of basic programming constructs.
  2. **Set up** Anaconda and the iPython/Jupyter Environment for data analytics projects.
  3. **Demonstrate** proficiency in using the most common Python libraries for data science, including NumPy, pandas, matplotlib and others.

- **Alignment with Program Outcomes:**

  Note: #DS ABET proposed outcomes

	Course Learning Outcome and Learning Level*		
Data Science Program Student Outcomes#	1	2	3
(1) An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.	Applying		
(2) An ability to formulate or design a system, process, procedure, or program to meet desired needs.			Synthesis
(3) An ability to develop and conduct experiments or test hypotheses, analyze, and interpret data and use scientific judgment to draw conclusions.		Creating	
(4) An ability to communicate effectively with a range of audiences.			
(5) An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.			
(6) An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.	Applying		Applying

*: learning level as described in Bloom's taxonomy and Anderson and Krathwohl's taxonomy.

	Course Learning Outcome and Learning Level*		
Business Analytics Program Student Outcomes	1	2	3
(1) Apply current business analytics concepts, techniques, and practices to solve business problems.	Applying	Knowledge	
(2) Analyze a given business problem using appropriate analytics techniques to generate insights and solutions.			Synthesis
(3) Communicate effectively insights, analysis, conclusions, and solutions to a diverse audience.			Creating

*: learning level as described in Bloom's taxonomy and Anderson and Krathwohl's taxonomy.

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Tutoring and Learning Center**: The Tutoring and Learning Center (The TLC) provides tutoring to all Florida Poly students who may need additional academic support. The TLC is staffed by students who have excelled in the courses they tutor. They offer support by reviewing concepts and materials from class, clarifying points of confusion and providing assistance with learning strategies. While the focus of TLC is to provide support to students in freshman-level courses, upper-level courses are also tutored at the Center. The TLC is located in the IST Commons (second floor).
    - **Knack Tutoring**: Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Florida Polytechnic University has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit floridapoly.joinknack.com and sign in with your student account.
- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit floridapoly.edu/writing center.

Course Policies

Attendance

- Students in **face-to-face (this includes labs and C-courses)** courses are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP).
- Exceptions to any attendance requirements may be made on a case-by-case basis
- Quizzes and class activities will only be graded if you are physically present in class. Students may not complete these activities remotely without prior approval. Exceptions will be announced in advance if applicable.
- Students are expected to arrive on time to each class session. Attendance will be recorded in Canvas at the beginning of class. You have up to **five minutes after class begins** to enter the attendance code.

- If you arrive late and miss the code entry, you may email the instructor **up to two times per semester** to request a manual attendance correction. After those two instances, any additional late arrivals without valid, documented reasons will be recorded as **"absent"** in Canvas.

Open-Book Class Quizzes
Quizzes are mostly designed as *in-class learning activities* rather than traditional exams. You may use your notes, lecture slides, and textbook while answering. You are also encouraged to discuss ideas with your classmates to deepen understanding.

However, **do not use Google, ChatGPT, or any other AI tools.** The goal is to apply what you have learned in class and demonstrate your own reasoning and understanding of the concepts.

Participation
Students are expected to participate in the classroom experience. The use of earbuds/headphones during class is specifically not allowed and students who engage in this behavior may be asked to leave the class for the day (noting exceptions for authorized accommodations). In addition, students who routinely do not bring materials to class that are required for participation, will not be given credit for class attendance, and if this becomes a pattern of behavior, may be asked to leave the class for the day. Persistent problems with participation may result in a code of conduct referral.

Special Permissions/Requests:
Permissions/excuses due to medical emergencies will be given ONLY if the student turns in a medical note from the doctor within 2 weeks of being seen by the doctor.
The instructor will not be able respond to emails coming directly from students asking for special permissions or requests due to unforeseen circumstances. If students are experiencing some difficult situation due to unforeseen circumstances and are unable to focus on the coursework, they are asked to reach out to the CARE Services at Florida Poly. If the Case Manager approves their case, then the instructor will receive an email from the Case Manager attaching a memo from CARE Services on behalf of the student.

Late Work/Make-up work
Students are expected to turn their assignments in on or before the due date. Late assignments will suffer a 10% penalty for every 24-hour. For example, an assignment worth 100 points turned in 2 days late will receive a 20-point penalty. Assignments turned in 4 or more days after the due date will receive a grade of '0', but you can still have it graded and receive feedback.

Grading Scale: (See also University Grading Policy).
Grades will be determined according to the following scale:

93 to 100	A	73 to 75.99	C
90 to 92.99	A-	70 to 72.99	C-
86 to 89.99	B+	66 to 69.99	D+
83 to 85.99	B	63 to 65.99	D
80 to 82.99	B-	60 to 62.99	D-
76 to 79.99	C+	Below 59.99	F

Assignment/Evaluation Methods:

Evaluation Method	*Percentage*
Attendance	5%
Homework	15%

Quizzes/Class Activities	15%
Project	10%
Exams	55%
Total	100%

CANVAS Policy:

- Assignments, announcements, and information will be posted on CANVAS. **Students are responsible for checking CANVAS regularly to be aware of their assignments** and other class information. Please see the end of this document for guidelines for submission of assignments.

Email Policy:

- All students are required to use **studentuserID@floridapoly.edu** email system (most preferable) OR the CANVAS e-mail system to communicate with the instructor. On occasion, email may be used to disseminate important class-related assignments, announcements, and information. Students are responsible for any information or assignments given in e-mail. **In your email, please start by introducing yourself and mentioning the course title in the first line.**

Final Project Policy

- The course final project will be a group effort. In the final project, each group should apply a combination of operations research topics and techniques to model and solve problem in any area/field of interest.

- **Project Report** - Each group must submit a cohesive project report that conveys that you have mastered the techniques and best principles discussed during the semester.

- **Project Presentation** - An important aspect of operations research is taking time to share your findings with others. Each group will create a 10-15 minute presentation to summarize and present the findings to other students.
- Students are responsible for forming their own project groups and adding group information to the Excel file I will provide later in the semester. Failure to do so will result in a deduction of points.
- A **discussion board** will be created on Canvas to help students who have not yet formed a group connect with classmates.
- Each group member must actively contribute to the project and participate in the class presentation. Be punctual on the day of your presentation—lateness or absence will result in a grade deduction for that individual, though it will not affect the grades of group members.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The Office of Disability Services (ODS), facilitates reasonable accommodations for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodations. If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal, and communicate with your instructor about your approved accommodations as soon as possible. Arrangements for testing accommodations must be made in advance. Accommodations are not retroactive. If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible: DisabilityServices@floridapoly.edu; (863) 874-8770; www.floridapoly.edy/disability.

Accommodations for Religious Observances, Practices and Beliefs
The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX
Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. Any faculty or staff member you speak to is required to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discuss resources and options available.

Academic Integrity
Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in sanctions up to and including expulsion from the university.

Recording Lectures
Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action). *Recording class activities including, but not limited to, lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is* ***prohibited****.*

Course Schedule

- Important Dates: https://floridapoly.edu/academics/academic-calendar/index.php
- A tentative course calendar is included below.

Week	*Topic*	*Due assignments*
Week 1 |	**Introduction** • Introduction to Programming and Python • Appendix A1: Jupyter Notebook Setup • Appendix A2: Google Colab Setup	
Week 2 |	**Variables and Statements** • Python's basic Types	

	• More on Input and Output • Mathematical Statements • More about Math • More about Strings	
Week 3 |	**Decisions** • About Decisions in Programs • Multi-way Decisions • Nested (Sequential) Decisions • More about Decisions **Repetition** • About Repetition • The *While* Statements • The for Statement, with range() Function • Using while vs. for • Infinite Loops • Adding Validation • About break and continue	• Quiz 1 (Variables & Statements) • Assignment 1 (Variables & Statements, Decisions)
Week 4 |	**Defining Functions** • Introduction to Functions • Multiple Parameters • Functions and the Console: Input and Output • A Function Calling Another Function • Some Further Design Points for Functions • Combining Concepts: Functions and Decisions	• Quiz 2 (Decisions and Repetitions) • Assignment 2
Week 5 |	**Lists** • About Lists • Creating Lists • Iterating over a List to Get a List's Items • Getting Part of a List with Slicing • Asking Questions of a List • Maintaining a List • Ordering a List: sorted(), sort(), reverse() • Representing a Table in a List • About Tuples—Unchangeable Lists	Exam 1
Week 6 |	**Reading and Writing Files**	

	• About Files • Reading a File's Line • Reading a File's Lines with Repetition • Parsing a File's Fields • Writing a File • Handling Errors with exceptions	
Week 7 |	**Pandas DataFrames and Series** • About pandas DataFrames and Series • Creating DataFrames • Getting Information about DataFrame Data • Getting Data: Columns, Rows, and Cells	• Quiz 3 (Reading and Writing Files, Strings, Dictionaries and Sets) Assignment 3
Week 8 |	**Pandas DataFrames and Series** • Getting Data: Sorting, Filtering, Slicing, Looping • Missing Values • Maintaining DataFrame Data • Joining Two DataFrames	
Week 9 |	Spring Break	
Week 10|	**pandas for Data Preparation** • About Data Preparation • Numbers • Dates • Categories • Strings • Key Fields • Inter-field Checking • Finding Missing Related Rows between Tables • Reorganizing Table Layout	Exam 2
Week 11 |	**Pandas for Data Preparation** • Aggregation and Grouping • Pivot Tables • Vectorized String Operations • Working with Time Series • High-Performance Pandas: eval() and query()	Assignment 4 (pandas for Data Preparation)
Week 12 |	**Data Visualization**	Quiz 4 (pandas for Data Preparation)

	• About pandas, Matplotlib, and seaborn Charting • Line Chart • Clustered Bar Chart • Horizontal Bar Chart • Data Preparation • Stacked Bar Chart • Pie Chart	
Week 13 |	Data Visualization • Time Series • Histogram • Box Plot • Scatter Chart	
Week 14 |	Statistics • Descriptive Statistics • Summarizing Data with pandas Pivot Tables • Analyzing Time Series with pandas Moving Statistics • Comparing Populations • Confidence Intervals • Reviewing a Distribution and Identifying Outliers • Analyzing a Relationship with Simple Regression • Forecasting Using Multiple Regression	Assignment 5 (Visualization) Quiz 5 (Visualization)
Week 15 |	Project Presentation	Assignment 6 (Statistics) Quiz 6 (Statistics)
Week 16 |	Review and Reading Days	

I reserve the right to modify this schedule as required by the progression of the class.

Tentative Rubric for Project

Project				
Criteria	Ratings			Pts
Code Quality Clarity, organization, and comments in the code.	**20 pts** **Full Marks**	**10 pts** **Partial Marks**	**0 pts** **No Marks**	20
Data Handling Proper loading, cleaning, and manipulation of the dataset.	**20 pts** **Full Marks**	**10 pts** **Partial Marks**	**0 pts** **No Marks**	20
Descriptive Statistics Accurate computation and interpretation of descriptive statistics.	**20 pts** **Full Marks**	**10 pts** **Partial Marks**	**0 pts** **No Marks**	20

Data Visualization Effective use of Matplotlib and Seaborn for visualization.	**20 pts** **Full Marks**	**10 pts** **Partial Marks**	**0 pts** **No Marks**	20
Analysis and Interpretation Thoughtful analysis and interpretation of the data.	**20pts** **Full Marks**	**10 pts** **Partial Marks**	**0 pts** **No Marks**	20
Total Points				100