



FLORIDA ATLANTIC UNIVERSITY

CAP 5768-004 17212

Intro to Data Science

Date: Wednesday, Friday 12:30 PM - 1:50 PM

Building: Arts and Letters Boca **Room:** 189

3 Credit(s)

Spring 2024 - 1 Full Term

Instructor Information

Safak Kayikci

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Course Description

Introduction to Data Science

Prerequisite: Programming competency at the level of an online short course (e.g., Code Academy)

This course surveys foundational topics in data science and reinforces practical programming skills in the context of data analytics. Students learn fundamentals of computational data analysis using statistics and machine learning and gain experience working with data sets from a variety of domains. May also be taught by the Mathematical Sciences Department

This course deals with the principles of data science and analytics. Topics covered include statistical analysis of data, measurement techniques and tools, machine learning methods, knowledge discovery and representation, and classification and prediction models.

None

Instructional Method

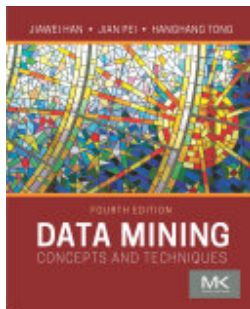
In-Person

Traditional concept of in person. Mandatory attendance is at the discretion of the instructor.

Required Texts/Materials

No Required TextBook

Recommended Readings and Materials



Data Mining

ISBN: 9780128117613

Authors: Jiawei Han, Jian Pei, Hanghang Tong

Publisher: Morgan Kaufmann

Publication Date: 2022-07-02



Data Science Using Python and R

ISBN: 9781119526810

Authors: Chantal D. Larose, Daniel T. Larose

Publisher: John Wiley & Sons

Publication Date: 2019-04-09

Course Objectives/Student Learning Outcomes

In this course, students will:

1. Learn fundamental principles of data science and its applications.

2. Use Python programming to wrangle, visualize, and analyze data.
3. Apply a variety of statistical learning techniques to data in Python.
4. Write a report describing the findings of a data analysis project.

Upon completion of this course, students will be able to:

1. Define and differentiate key terminology in data science, including predictors/features/independent variables and response/dependent variables, prediction and inference, bias and variance, model accuracy and interpretability, parametric and nonparametric methods, and supervised and unsupervised learning (ABET 1).
2. Perform data wrangling, visualization, and analysis in Python (ABET 1).
3. Apply a diversity of statistical learning techniques in Python, including linear regression, classification methods, nonlinear modeling approaches, tree-based methods, support vector machines, unsupervised learning, and resampling methods (ABET 1).
4. Select appropriate statistical learning techniques to address targeted questions in data science (ABET 6).
5. Present interpretations of findings from data analyses in a written report (ABET 6).

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct [University Regulation 4.007](#).

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available

for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Course Evaluation Method

All assignments, homework, projects, programs, quizzes, and exams in this course must be INDIVIDUAL effort. Late submissions will not be accepted or graded. All assignments are individual work, the best way to learn is to complete your own assignments. Sharing code and sharing solutions is considered cheating, this includes posting completed work before the assignment official deadline onto sites such as GitHub, emailing work to other students, allowing any access to your work before the official deadline has passed. Other offenses include submitting another person's work as your own, this includes taking code and solutions off sites such as GitHub, Chegg, etc.

Modifying code and submitting it as your own is a fraudulent practice—specifically, plagiarism—and is no different than copying paragraphs of information from a book or journal article and calling it your own (make sure that you work independently and submit only your own code)

Please take the time to read the documentation. You are responsible for the information outlined in it. Please see the instructor, any teaching assistant, or Engineering Student Services tutoring for assistance. Check the Help Section on Canvas.

Assignments (75%)

There are four (4) assignments this semester.

Final Project (25%)

An individual final project with a topic selected by the student and approved by the instructor.

Note: The minimum grade required to pass this course is C.

Note: Extra credit assignments (if any) count ONLY after passing the class with a minimum of "C" grade.

Late work is not acceptable.

All assignments must be submitted on time via Canvas, unless otherwise noted.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Religious Accommodation Policy Statement

In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-

of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[University Regulation 4.002](#) of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

Late work is not acceptable.

Throughout the semester, multiple homework assignments will be posted via Canvas. For each assignment, you will have about 7-10 days to complete the assignment and submit your solution via Canvas. Please note that the due date for homework assignments will not be updated after the assignment is posted.

Incomplete grades are not awarded unless there is solid evidence of medical or otherwise serious emergency situation. Grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Student Support Services and Online Resources

- [Center for Learning and Student Success \(CLASS\)](#)
- [Counseling and Psychological Services \(CAPS\)](#)
- [FAU Libraries](#)

- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Center for Global Engagement](#)
- [Office of Undergraduate Research and Inquiry \(OURI\)](#)
- [Science Learning Center](#)
- [Speaking Center](#)
- [Student Accessibility Services](#)
- [Student Athlete Success Center \(SASC\)](#)
- [Testing and Certification](#)
- [Test Preparation](#)
- [University Academic Advising Services](#)
- [University Center for Excellence in Writing \(UCEW\)](#)
- [Writing Across the Curriculum \(WAC\)](#)