Course Syllabus - Fall 2025
CS 301: Introduction to Data Science

General Information

Instructor: Dr. Yajuan Li
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Office: GITC 4309
Office Hours: Tuesday 3:30~5:30 pm (Zoom) or by appointment

Course Overview

This course is an introductory data science course designed for CS BS students to equip them with introductory principles as well as hands-on skills that are required to solve data science problems. The course will focus on learning models, formalism, and algorithmic techniques that are popular in data science and heavily used in practice. Students are also introduced to data science tools (e.g., Excel, Python). Extra attention will be paid to strengthen the theoretical as well as development/programming skills in performing data analyses using real-world small and large-scale datasets.

The primary objectives of the course are:

- Establishing a quantitative view and mastering scientific approaches for analyzing large-scale datasets.
- Understand core data science algorithms and their practical applications.
- Gain implementation skills for applying data science algorithms to real-world problems.
- Learn to analyze, evaluate, and visualize results using appropriate metrics and techniques.
- Acquire proficiency in using popular data science tools and platforms.

The outcomes of the course are:

- An ability to understand and apply the data science process.
- An ability to use data science tools and programming libraries for data analysis and modeling.
- An ability to build and evaluate basic machine learning models for classification, regression, and clustering tasks.
- An ability to apply data mining techniques and understand big data challenges.
- An ability to implement and assess data science solutions for real-world applications using appropriate methods.
- An ability to visualize and interpret large datasets using appropriate techniques.

Prerequisite: CS 114 and (MATH 333 or MATH 341) with a grade of C or better.

Textbooks (optional):

- Introduction to Data Science: A Python Approach to Concepts, Techniques and Applications by Laura Igual, et. Al.
- Data Mining: Practical Machine Learning Tools and Techniques Frank & Witten

- Applied Statistics for Engineers and Scientists (3E 14) Devore & Farnum

Tentative Course Topics (Subject to changes according to progress)

- Introduction to Data Science
- Data Science Tools and Ecosystem
- Data Collection, Engineering, and Preprocessing
- Exploratory Data Analysis and Visualization
- Machine Learning Algorithms
- Data Mining Techniques
- Big Data Concepts and Technologies
- Real-World Applications of Data Science

Attendance

You are supposed to attend all the classes. Participation is highly encouraged to make the class more interactive. In general, students who attend class regularly perform much better than those who come only occasionally. If you miss one class, be sure to consult one of your classmates about the content of the lecture and use Canvas to get notes, exercises, assignments, deadlines, and announcements. During class, kindly ensure that mobile phones are powered off. Additionally, it is expected that during class hours, activities such as gaming, texting, emailing, web browsing, or any other unrelated activities are refrained from, and the focus remains on the class content.

Late Policies

(1) Assignments and quizzes must be submitted through Canvas by the specified due date unless otherwise specified in class. We don't accept late submissions.
(2) Students can get an extended deadline only if they have special/emergency reasons verified by the Dean of Students. https://www.njit.edu/dos/student-excusals

There will be NO EXCEPTION to these late policies. Please manage your time appropriately.

Exam Policies

Exams are in-person, and a Student ID (or equivalent official photo identification) is required. Respondus LockDown Browser and Monitor will be used to monitor and proctor exams. Students are responsible for installing and testing the software before the exam.
https://download.respondus.com/lockdown/download.php?id=264548414
More information is available at:https://web.respondus.com/student-help/

Late submissions and makeup exams are not allowed. Students who have special circumstances or emergencies must seek formal approval in advance from:

- The Office of Accessibility Resources and Services for testing accommodations: https://www.njit.edu/accessibility/requesting-testing-accommodations
- Or be verified by the Dean of Students: https://www.njit.edu/dos/student-excusals

All approved rescheduled exams must be completed within one month of the original exam date. No extensions will be granted beyond this deadline. If a student misses the rescheduled exam, the grade for that exam will be recorded as zero. No further rescheduling will be allowed.

Grade Dispute Policy

Once a grade is posted, students have 48 hours to email the TA if they believe there is an error or have concerns about the grading. After this window, the grade is considered final and will not be revisited. Please note that any re-evaluation may result in a higher or lower grade, depending on the outcome of the review. Grading criteria are applied consistently to all students and are not subject to negotiation.

TA contact information can be found on Canvas → People → TA.

Grading Breakdown

Quiz 10%, Midterm Project – 30%, Final Project 25%, Final Exam – 35%.

Grading Scale

Grade	A	B+	B	C+	C	D	F
Overall Course Score	≥90	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[60, 70)	<60

*Final grades are based on the above tentative grading scale. I reserve the right to change the scale as the need arises.

Collaboration and Honor Code

Each student is responsible for his/her own work. Students may discuss problems together but must write up their own solutions. When writing up the solutions, students should write the names of people, if any, with whom they discussed the assignment. Note that copying homework or programming assignments, in full or in part is forbidden. Students found cheating or plagiarizing will be immediately referred to the Dean of Students and the NJIT Committee on Professional Conduct and subject to Disciplinary Probation, a permanent marking on the record, possible dismissal, and an "F" grade in the course. All submitted assignments will be checked for similarities, and plagiarism and guilty students identified. In the exam, each student is required to sign the Honor Code Agreement "On my honor, I pledge that I have not violated the provision of the NJIT Student Honor Code."

University Policy on Academic Integrity

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"

Generative AI

Generative AI tools, such as ChatGPT, are permitted in this course only if explicitly authorized by the instructor for a specific assignment. The student is fully responsible for the integrity and

accuracy of all submitted work. If permitted Generative AI tools produce incorrect results that are incorporated into the submission, the student will be graded based on the accuracy of the submitted work. Errors made by AI tools are solely the responsibility of the student.

Student Absences for Religious Observance

NJIT is committed to supporting students observing religious holidays. Students must notify their instructors in writing of any conflicts between course requirements and religious observances, ideally by the end of the second week of classes and no later than two weeks before the anticipated absence.

*Students will be notified in class of any changes to the syllabus.