

## COMP-7150-2 Fundamentals of Data Science Spring Term 2024

**Instructor:** Salim Sazzed

**Time and Location:** MW 12:40 pm-2:05 pm (International Center-115)

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**Office Hours:** Wednesday, 2:15 PM – 3:15 PM (Room 131)

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### Learning Objectives

The aim of this course is to learn the data science lifecycle and essential stages of data acquisition, exploration, manipulation, and transformation. By the end of the course, students will have a solid foundation in data science that enables them to work with real-world data, perform analysis, and communicate insights effectively.

**Learning materials:** Slides, Online Videos, Interactive Discussions, Textbooks, Online resources, etc.

### Topics (subject to change)

- Introduction to Data Science
- Data Collection, Annotation, and Cleaning
- Data Manipulation and Transformation
- Exploratory Data Analysis (EDA)
- Statistical Data Analysis
- Python Libraries for Data Science (*NumPy, Pandas, Matplotlib, Scikit-Learn*, etc.)
- Introduction to Machine Learning (supervised and unsupervised techniques)
- Regression and Classification
- Model Evaluation
- Data Ethics and Privacy
- Applications of Data Science
  - Text/Sequence Classification.
  - Classification/Segmentation from image data.
  - Classification using feature data.

## Course Textbook

No specific textbooks are mandatory for this course. You are encouraged to explore online resources, including tutorials and YouTube videos, to enhance your understanding of the subject matter.

**Laptop:** Feel free to bring your laptop to class, as we will be utilizing online resources during the lectures. Also, always bring a pen and paper in the class, as occasionally we will solve some mathematical problems.

**Pre-Requisites:** Mathematics fundamentals, Programming skills in Python, Machine learning basics

**Evaluation:** Your final grade for this course will be determined by the following averaging procedure (subject to change):

Assignments (3-4)	15 %
Monthly Exams (3) Last week of each month (February, March, April)	40 %
Paper Presentation (1)	10 %
Two (2) Projects: - Project proposal (mid/last week of February) - Project mid-evaluation (last week of March) - Final Presentation + Report (last week of April)	35 % 5% 10% 20%
Bonus credit	5%
<b>Total</b>	<b>105%</b>

\* Note that the weight/percentage distribution of each component is subject to change due to various reasons such as final student enrollment and other factors.

\*\* Bonus credit will be based on research components such as data annotation, project scope/complexity, and class participation.

\*\*\* There will be no final exam; instead, we will focus more on practical learning to make the best use of the course.

## Grading:

A+ ≥ 96%

A ≥ 93%

A- ≥ 90%

B+ ≥ 85%

B ≥ 80%

B- ≥ 75%

C+ ≥ 70%

C ≥ 65%

C- ≥ 60

A percentage below 60 will result in a failing grade (F).

**Note:**

- i. A modified curve may be used for determining the grades at the discretion of the instructor.
- ii. Due to **fair grading** policy of the University, I am unable to do entertain any individual request to increase marks. Although I understand, you may need a particular grade to maintain your scholarship or other things, I won't be able to do that at the end of the final exam. Study throughout the semester and you will likely perform well in the exam.

**Attendance and Class Environment:**

To receive the class attendance mark, you must attend at least 40% of the classes. If your participation falls below 40%, you will not receive any marks for that component. It is important to make an effort to attend all classes, as there is a strong correlation between regular attendance and obtaining a good grade. Students are responsible for any material and content covered in missed lectures.

However, note that, maintaining the learning environment in the classroom is more important than merely coming to class. **Please refrain from engaging in conversations with fellow students or causing any other form of disturbance during class.** Any disruption will result in a 1% reduction in marks (negative marking), and any subsequent disruption will double the penalty. **Repeated disruptive behavior may ultimately result in receiving a failing grade (F) for the class.**

**Exam:**

1. Exams are **closed book** and **closed notes**.
2. **No late assignment** will be accepted unless well-documented reasons are presented.
3. By taking this course, you agree that any assignment turned in may undergo a review process and that the assignment may be included as a source document in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents. Any assignment not

submitted according to the procedures given by the instructor may be penalized or may not be accepted at all.

4. All assignment must be individual work. Plagiarizing assignments or code sharing is not permitted.

5. Any grading errors in assignments should be notified **within a week** to the TA. We will not honor any late request for that.

### **Academic Integrity:**

For details information on U of M code of student conduct and academic discipline procedures, please refer to <https://www.memphis.edu/osa/students/academic-misconduct.php>

If plagiarism or cheating occurs, the student will receive a failing grade on the assignment (0) and (at the instructor's discretion) a failing grade (F) in the course.

Especially, presenting work that is not your own without giving proper credit to the original author constitutes plagiarism and breaches the honor code. Copying source code or written content from any external source, including fellow students, is unacceptable. When permitted to use resources like the Internet, it is imperative to provide appropriate attribution. Any evidence of an honor code violation (cheating) will result in a 0 grade for the assignment/exam, and the incident will be submitted to the department/university for further review. Evidence of cheating may include a student being unable to satisfactorily answer questions asked by the instructor about a submitted solution. Cheating includes not only receiving unauthorized assistance, but also giving unauthorized assistance.

Students may still provide legitimate assistance to one another. You are encouraged to form study groups to discuss course topics. Students should avoid discussions of solutions to ongoing assignments and should not, under any circumstances, show or share code solutions for an ongoing assignment.