COMP 7150: Foundations of Data Science Fall Term 2023

Instructor: Salim Sazzed
Time and Location: F 9:00 am - 11:50 am, International Center 115
Email: ssazzed@memphis.edu
Phone: 757-275-5573
Office Hours: By appointment (Dunn Hall, Room 131)
TA: Pravalika Sundari (psundari@memphis.edu), Naveenreddy Narayana (nnrayana@memphis.edu) and Mei Khei Lam (mlam2@memphis.edu)
TA Office Hours: please email TAs (CC me) to schedule a meeting.

If you have any questions, please send an email to the TAs and copy me. Whenever you deem it necessary to get answers from me, you may communicate with me directly via email.

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 Video, Interactive Discussions, Textbooks, Online resources, etc.

Topics (subject to change)

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

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):

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Assignments (2-3)</td>
<td>10%</td>
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<tr>
<td>Monthly Exams (3)</td>
<td>30%</td>
</tr>
<tr>
<td>Paper Presentation (1)</td>
<td>10%</td>
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<tr>
<td>Final Exams (1)</td>
<td>20%</td>
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<tr>
<td>Project (1)</td>
<td>30%</td>
</tr>
<tr>
<td>Bonus credit</td>
<td>10%</td>
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</tbody>
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Grading
Grading: A+ ≥ 95%, A ≥ 92%, A− ≥ 87%, B+ ≥ 82%, B ≥ 77%, B− ≥ 72%, C ≥ 65%
Note: A modified curve may be used for determining the grades at the discretion of the instructor.

Policies (modified from the COMP/EECE 7745 Machine Learning (Summer 2023) offered by Md Zahangir Alom)

1. Exams are closed book and closed notes.
2. No late homework will be accepted unless well-documented reasons are presented.
3. All homeworks must be individual work. Plagiarizing assignments or code sharing is not permitted.
4. Although class attendance does not contribute to your marks, it's important to make an effort to attend all the classes. 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.
5. No early or late exams will be given unless under extreme situations.
6. Any grading errors in assignments should be notified within a week to the TA.
7. 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.
8. If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor's discretion) a failing grade in the course. The course instructor may also
I have decided to forward the incident to the University Judicial Affairs Office for further disciplinary action. For further 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