

CS 5593 DATA MINING
FALL 2023
SECTION 001: 3:00 PM - 4:15 PM (Monday, Wednesday)
Room 119 Carson Engineering Center (CEC)

Instructor:

Dr. Le Gruenwald; Email: ggruenwald@ou.edu; Office Hours: 4:30 PM-5:30 PM Monday, Wednesday via Zoom (the Zoom credentials for office hours are posted on the class website on Canvas)

Teaching Assistant:

Muayad Al Mamari; Email: muayad@ou.edu; Office Hours via Zoom are posted on the class website on Canvas

Required Textbook:

Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, and Vipin Kumar, *Introduction to Data Mining, 2nd Edition*, Pearson Education, Inc., 2019

Reference Materials:

1. CRAN, *An Introduction to R*, <https://cran.r-project.org/doc/manuals/r-release/R-intro.html>
2. Ian H. Witten, Eibe Frank, and Mark A. Hall, "Data Mining – Practical Machine Learning Tools and Techniques," 3rd Edition, Chapters 10-17, Morgan Kaufmann, 2011 (*available online on OU Library Website*)
3. Jiawei Han, Jian Pei, and Hanghang Tong, *Data Mining: Concepts and Techniques, 4th Edition*, Morgan Kaufmann, 2022
4. Jure Leskovec, Anand Rajaraman and Jeffrey D. Ullmann, *Mining of Massive Datasets*, 2014
5. Additional materials provided by the instructor.

Prerequisite:

Permission of instructor

Course Website:

<https://canvas.ou.edu>

Course Coverage:

This course covers the process, concepts and techniques in data mining, including advanced techniques that deal with big data. It provides students with the necessary background for the application of data mining to real world problems. The topics to be covered include:

Topic	Reading
1. Introduction to Data Mining	Ch. 1 (Text)
2. Data	Ch. 2 (Text)
3. Data Mining Tools: WEKA and R	Ref. 1, 2
4. Exploring Data	Ch. 3 (1 st Edition, on the class website)
5. Classification: Concepts, Decision Trees and Model Evaluation	Ch. 3 (Text)
6. Association Analysis	Ch. 5 (Text)
7. Cluster Analysis	Ch. 7 (Text)
8. Anomaly Detection	Ch. 9 (Text)
9. Classification: Alternative Techniques	Ch. 4 (Text)
10. Association Analysis: Advanced Concepts	Ch. 6 (Text)
11. Big Data Mining	Ch. 8 (Text), Ref. 4

Grading:

Group Project (Proposal, Progress Report, Final Report, and Presentation)	50%
Homework	50%

ACADEMIC INTEGRITY: Homework is individual work; it must be done by you only – no collaboration with anyone is allowed. Group Project is group work; it must be done by you and your assigned group members only – no collaboration with other groups or anyone else is allowed. The use of generative AI tools is not allowed in all homework assignments and group project components unless explicitly stated otherwise in the requirements of a specific homework assignment or a specific project component. These tools include ChatGPT, Bard, Bing Chat, and other AI writing and coding assistants. Violations of these rules will be considered academic misconduct and will result in action as specified in the Academic Integrity Code at OU: <http://www.ou.edu/integrity>. Consult also the following web page for a Student's Guide to Academic Integrity at OU: <http://www.ou.edu/integrity/students>.

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RELIGIOUS OBSERVANCE: It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays without penalty.

ADJUSTMENTS FOR PREGNANCY/CHILDBIRTH RELATED ISSUES: Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see www.ou.edu/content/eoo/faqs/pregnancy-faqs.html for commonly asked questions.

TITLE IX RESOURCES: For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24.7, counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5, M-F) or OU Advocates 405-615-0013 (24.7) to learn more or to report an incident.