

The University of Texas at El Paso
Department of Mathematical Sciences
Syllabus

Course #: STAT 5474/DS 6474 (CRN 23675/27761)
Course Title: Statistical Machine Learning I/ Introduction to Data Mining
Credit Hours: 4.0
Term: Spring 2024
Course Meetings & Location: TR 1:30 PM – 3:50 PM at Bell Hall 130
Prerequisite Courses: STAT 5428 with B or better, or as approved by the instructor.

Instructor: Dr. Abhijit Mandal, Associate Professor
Office Location: Bell Hall 200
Contact Info: Phone: 915-747-6762
E-mail address: amandal@utep.edu
Fax: 915-747-6502 (Math Department)
Emergency Contact: 915-747-5761 (Math Department)
Office Hours: Thursday 4:00 PM– 5:00 PM at Bell Hall 200 or by appointment by email.

TA: Ebenezer Nkum (Email: enkum@miners.utep.edu)

Textbook(s), Materials: Required:

1) James, G., Witten, D., Hastie, T., and Tibshirani, R. (2021). An Introduction to Statistical Learning with Applications in R. Springer.
Free download: <https://www.statlearning.com/>

1) James, G., Witten, D., Hastie, T., Tibshirani, R., and Taylor, J. (2023). An Introduction to Statistical Learning with Applications in Python. Springer.
Free download: <https://www.statlearning.com/>

2) Hastie, T., Tibshirani, R., and Friedman, J.H. (2008), Elements of Statistical Learning, 2nd ed., Chapman & Hall.
Free download: <http://www-stat.stanford.edu/~tibs/ElemStatLearn/>

Course Description and Learning Outcomes: Introduction to techniques for data mining and analytics with emphasis on R programming and hands-on experience with real data; topics covered: dimension reduction, cluster analysis, ordinary and partial least squares regression, principal components regression, ridge regression, l1-regularization, logistic regression, assessment of classifier, decision/regression trees, bagging and boosting, random forests, and data visualization techniques.

Course Activities/Assignments: Homework assignments and quizzes will be regularly assigned. There will be one midterm and one final exam. For the final project, students will choose their own dataset, formulate an intriguing research question, and conduct a thorough statistical analysis independently.

Course Schedule:

- Duration: 01/16/2024 – 05/02/2024
- Midterm: Tuesday, March 5, 2024, from 1:30 PM to 3:50 PM.
- Final exam: Thursday, May 9, 2024, from 1:00 PM to 3:45 PM.
- Spring Break: March 11, 2024, to March 15, 2024.
- The dates of the exams listed here are tentative. The exact dates will be announced on Blackboard.
- Course-drop deadline: Thursday, 03/28/2024 (No “W” will be assigned for dropping the course after the deadline!)

Class Recordings: Some classes may be recorded. Our use of such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. You may not share recordings outside of this course. Doing so may result in disciplinary action.

Grading Policy: Homework and Quiz: 35%
Midterm: 25%
Final Exam: 30%
Project: 10%

The usual grading scale will be used for this course (90–100% = A, 80–89.99% = B, 70–79.99% = C, 60–69.99% = D, 0–59.99% = F).

You must make at least 75 on your final exam to get an A in this course.

Make-up Policy: Make-up work will be given only in the case of a documented emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me - in advance if possible - and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

Attendance Policy: Students are strongly encouraged to attend all class meetings and participate in all activities. It is also important to read the textbooks and work through the examples/programs given in the textbooks and the class. Failure to accomplish the above – at minimum – will almost invariably ensure a less than satisfactory grade for this course.

Course Drop Policy According to UTEP Catalog, “At the discretion of the instructor, a student can be dropped from a course because of excessive absences or lack of effort. A grade of ‘W’ will be assigned before the course drop deadline and a grade of ‘F’ after the course drop deadline.” See Policies and Regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I may drop you from the course. I will provide 24 hours advance notice via email.

Technology Requirements Some course contents are delivered via the Internet through the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop (Windows or Mac). You will need to download or update the following software: Microsoft Office, Adobe Acrobat Reader, Jupyter notebook, PyCharm (or equivalent IDE for Python programming), R, RStudio and Miktex (or MacTeX for Mac). Check that your computer hardware and software are up-to-date and able to access all parts of the course.

If you do not have word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP’s Microsoft Office Portal. Click the following link for more information about [Microsoft Office 365](#) and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological needs of students. Please do not contact the instructor for this type of assistance. The Help Desk is much better equipped to assist you!

- Alternative Means of Submitting Work in Case of Technical Issues: I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a backup. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through Blackboard, please contact the UTEP Help Desk. You can email me your backup document as a last resort.
- Incomplete Grade Policy: Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.
- Copyright Statement for Course Materials: All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.
- Accommodations Policy The University is committed to providing reasonable accommodations to students with documented disabilities. Students who become pregnant may also request reasonable accommodations, in accordance with state and federal laws and regulations and University policy. Accommodations that constitute undue hardship are not reasonable. To make a request, please register with the UTEP Center for Accommodations and Support Services (CASS). Contact CASS at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.
- Scholastic Integrity Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

Guidance on Artificial Intelligence Some AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, can be beneficial during the early brainstorming stages of an activity, and you are welcome to explore them for that purpose. However, keep in mind that AI-generated ideas are not your own and may hinder your ability to think critically and creatively about a problem. It is also important to remember that these technologies often “hallucinate” or produce materials and information that are inaccurate or incomplete—even providing false citations for use.

That said, you are not allowed to submit any AI-generated work in this course as your own. If you use any information or materials created by AI technology, you are required to cite it like you would any other source. Consider how this will affect your credibility as a writer and scholar before doing so. Any direct use of AI-generated materials submitted as your own work will be treated as plagiarism and reported to the Office of Student Conduct and Conflict Resolution (OSCCR).

Plagiarism Detecting Software Some of your course work and assessments may submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

Resources Where you can go for assistance:
UTEP provides a variety of student services and support. Please refer to the QR code below for a listing of campus resources.



Last updated: 01/16/2024

Disclaimer: This syllabus may be subject to changes if these are deemed necessary by the instructor.