Course Syllabus: **Data Mining and Text Analytics in Business**

Dillard College of Business Administration
MIS 5163 Section Y70
Fall Semester 2025

Contact Information

Instructor: Jiaxi Luo
Office: Dillard Building 216
Office hours: Mondays & Wednesdays 3:30p – 5:30p Tuesdays 10:30a-11:30a
Office phone: (940) 397-3268
E-mail: jiaxi.luo@msutexas.edu

Zoom Link (Only for scheduled meeting)

https://msutexas-edu.zoom.us/j/94639113045

Instructor Response Policy

Dr. Luo will try to response all emails within 24 hours on the weekdays.

Textbook & Instructional Materials

Suggested Reading Lists:

Machine Learning with Python Cookbook; ISBN-13: 978-1491989388 by Chris Albon
Applied Text Analysis with Python; ISBN-13: 978-1491963043 by Benjamin Bengfort, Rebecca Bilbro, and Tony Ojeda
Machine Learning Techniques for Text: Apply modern techniques with Python for text processing, dimensionality reduction, classification, and evaluation; ISBN-13: 978-1803242385 by Nikos Tsourakis
Python Machine Learning: Machine Learning and Deep Learning with Python, scikit-learn, and TensorFlow 2; ISBN-13: 978-1789955750 by Sebastian Raschka, Vahid Mirjalili
Python Machine Learning By Example: Build intelligent systems using Python, TensorFlow 2, PyTorch, and scikit-learn; ISBN-13: 978-1800209718 by Yuxi Liu

A PC/laptop/tablet with webcam capability, be able to run PyCharm Professional (Chromebooks won't work due to insufficient computing power)
PyCharm Professional (Free for student account)
Additional readings are posted to D2L.

Course Description

The course will deliver concepts and skills of the various techniques and methodologies used in data mining and text analytics, including supervised and unsupervised learning: decision trees, clustering, regression, support vector machine, and neutral networks; text mining techniques like: sentiment identification, topic classification, text summarization, generating text, based on time restrictions.

Students will learn how to apply these techniques to solve real-world business problems such as customer segmentation, sentiment analysis, and predictive modeling. The course will also provide hands-on experience using popular data mining tools: Python to extract insights from large datasets.

In addition, students will be introduced to the latest trends and advancements in text analytics, including machine learning-based approaches for text classification, topic modeling, and named entity recognition. By the end of the course, students will have a comprehensive understanding of data mining and text analytics and be able to apply their knowledge to real-world business scenarios.

Course Objectives

I. General Learning Goals:

- Our students will be effective at problem solving and decision-making.
  Objective: Our graduates will demonstrate problem solving and decision-making abilities through the critical analysis, evaluation, and interpretation of business information.
- Our students will be effective communicators.
  Objective: Our graduates will be able to demonstrate a competency in speaking and writing for common business scenarios.
    2a: Our graduates will be able to demonstrate a competency in speaking for common business scenarios.
    2b: Our graduates will be able to demonstrate a competency in writing f or common business scenarios.
- Our students will be technologically prepared.
  Objective: Our graduates will be able to utilize available technology for business applications.
- Our students will be ethical decision makers.
  Objective: Our graduates will demonstrate ethical reasoning skills within a business environment.
- Our students will be effective team members.
  Objective: Our graduates will know how to use team building and collaboration to achieve group objectives.
- Our students will be multicultural and globally aware.
  Objective: Our graduates will understand the influence of global and multicultural issues on business activities.

These general learning goals are among those established by the Dillard College of Business Administration. General learning goals represent the skills that graduates will carry with them into their careers. While assessing student performance in obtaining these general learning goals, the Dillard College is assessing its programs. The assessments will assist us as we improve our curriculum and curriculum delivery.

II. Course Specific Learning Goals: After completing this course, students should be able to:

- Understand the fundamental concepts and techniques of data mining and text analytics, including text pre-processing, feature extraction, and classification.
- Learn how to use Python libraries such as pandas, NumPy, and scikit-learn for data manipulation and analysis.
- Learn how to use Python libraries such as NLTK and spaCy for natural language processing tasks, such as tokenization, stemming, and lemmatization.
- Understand how to apply text analytics and data mining techniques to real-world business problems, such as sentiment analysis, topic modeling, and predictive modeling.
- Learn how to visualize and communicate the results of data mining and text analytics using Python libraries such as matplotlib and seaborn.
- Get hands-on experience with a variety of real-world text datasets and business case studies.
- Understand the ethical and legal considerations of data mining and text analytics, and the importance of responsible data practices.

Student Handbook

Refer to: Student Handbook-2021-22

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

Office of Student Conduct

Grading/Assessment

- Exams (3): Both exams are open-book open-notes exams. Exams will cover assigned chapters, in-class lectures, videos, and any assigned readings. Students are responsible for all assigned textbook material, even if it is not directly discussed in class.
- Team Project: All students will participate in a team presentation. Details of the assignment will be provided, and team formation will be accomplished.
- Quizzes: Up to 100 points will be assigned to quizzes. Quizzes will be regular provided for each section to enhance students' skill.
- Homework: 100 points will be assigned to homework. Homework assignments are due before the beginning of class on the specified due date. All homework assignments are individual homework (not team/group/collaborative homework), unless otherwise specified by the instructor.
- Class Participation: Class participation is an important part to evaluate a student's engagement in this course. It is evaluated based on the online discussion activities. There are 14 discussion topics in the discussion forum on our D2L course website. Students are required to posted questions related to the discussion topics and/or answer other students' questions in the online discussion. Credit will be given if a student post at least 1 message for each two discussion topics within the specific timelines. The timelines for online discussion can be found in the calendar on our D2L course website. **Students who have more or equal to 5 absences in the lab will lose all Participation points.**

Table 1: Points allocated to each assignment

Assignments	Points
Exam I	100
Exam II	100
Team Project	150
Quizzes	100
Homework	100
Class Participation	50
Total	600

Table 2: Total points for final grade.

Grade	Points
A	540-600
B	480-539
C	420-479
D	360-419
F	<360

Late Work

Late homework less than one week after deadline maybe accepted, certain points will be deducted.

Make Up Work/Tests

Students with excused absences may make up missed examinations, quizzes (announced and unannounced), and in-class activities, but supporting documents are required. Arrangements must be made in advance if possible. In all cases, the instructor must be contacted no later than the day of the scheduled exam or no make-up will be allowed. At the instructor's discretion, a deduction may be assessed for a late exam.

Excused absences include active military/police/firefighter assignment, jury duty, university-authorized absences (for example, athlete events or study-abroad programs), and medical emergency for yourself or your immediate family member. For more information about university authorized absences, please refer to Midwestern State University Undergraduate Catalog:
https://catalog.msutexas.edu

Important Dates

Last day for term schedule changes: 08/25/2025-08/28/2025
Deadline to file for graduation: 09/22/2025
Last Day to drop with a grade of "W:" 11/24/2025
Check date on Academic Calendar.
Refer to: Drops, Withdrawals & Void

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Attendance

Students are expected to attend all meetings of the classes in which they are enrolled. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students of the specifics in writing at the beginning of the semester in a syllabus or separate attendance policy statement. An instructor who has an attendance policy must keep records on a daily basis. The instructor must give the student a verbal or written warning prior to being punished. Instructor's records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. Any individual faculty member or college has the authority to establish an attendance policy, providing the policy is in accordance with the General University Policies.

Online Computer Requirements

Taking an online class requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. ***Assignments and tests are due by the due date, and personal computer technical difficulties will not be considered reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings.*** Computers are available on campus in various areas of the buildings as well as the Academic Success Center. ***Your computer being down is not an excuse for missing a deadline!!** There are many places to access your class! Our online classes can be accessed from any computer in the world that is connected to the internet. Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they are able to help you get connected to our online services. For help, log into D2L**.**

Instructor Class Policies

- No food or beverage is allowed in the classroom. This is a college policy.
- Please come to class on time. Take care of personal business prior to class. I do not expect you to leave and return to class (unless there was an emergency, and you explain it to me after class).
- Class time is not for surfing the Web, monitoring Facebook, texting, or catching up on email. You will be asked to leave the class if you continually violate this policy. The same thing applies to cell phone usage for messaging during class.
- Turn off or silence your cell phones and any other electronic devices and put them away. Please, no texting. I think we can all go a little over an hour without contact with the outside world! Leaving class to return calls and coming back is not acceptable. If you have an emergency that requires your cell phone to be on, let me know and we'll work something out.
- Dress appropriately and conduct yourself professionally and with respect toward your peers and the instructor. Please don't talk while the instructor or others are discussing course materials. Participating in the class is the best way to avoid disturbing the class.
- Follow MSU Covid19 behavioral policies and procedures

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exists in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to Disability Support Services.

College Policies

Campus Carry Rules/Policies

Refer to: Campus Carry Rules and Policies

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by MSU TEXAS Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still

requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit Campus Carry.

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit MSUReady – Active Shooter. Students are encouraged to watch the video entitled "*Run. Hide. Fight.*" which may be electronically accessed via the University police department's webpage: *"Run. Hide. Fight."*

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University MSU Catalog

Weather Procedure

In the event of inclement weather, in-person class meetings will be canceled. Alternative assignments, such as online tasks or video-based activities, will be provided to ensure continued learning.

Notice

Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

AI-Tool Policy

We encourage students to harness AI tools, like ChatGPT, within the following guidelines:

- **English Writing**: Use AI for grammar and syntax improvement.
- **Drafting & Structuring**: Employ AI to help generate and structure case study drafts.
- **Summarization**: Use AI tools for concise summaries of lengthy case studies.
- **Coding Quality**: Leverage GitHub Copilot (or similar tools) to improve code quality, generate sample codes, and enhance programming efficiency.

However:

- **Original Thought**: While using AI for assistance, students must develop and present their own unique opinions on cases.
- **Academic Integrity**: Understand and support any content from AI tools. Avoid over-reliance and ensure originality. Misrepresentation will face academic consequences.

Leverage AI benefits responsibly and prioritize genuine understanding and original thinking.

Course Tentative Schedule:

Please keep this syllabus as a reference! Students are responsible for all information contained in the syllabus and for any changes to the syllabus, which will be announced in class.

Course Tentative Schedule

MIS 5613 Fall 2025 Tentative Course Schedule				
Week	**Date**	**Day**	**Format**	**Topic**
1	08/27/2025 - 09/01/2025		Online	Python Basics I: Variables, Data Types, and Input/Output
	08/27/2025	Wed	Lab	Practice: Python Installation, Course Introduction, PyCharm Setup
2	09/01/2025 - 09/08/2025		Online	Python Basics II: Functions and Control Flow
	09/03/2025	Wed	Lab	Practice: Writing Functions and Using Loops/Conditionals
3	09/08/2025 - 09/15/2025		Online	Python Collections: Tuples, Lists, Dictionaries, and Sets
	09/10/2025	Wed	Lab	Practice: Manipulating Lists, Tuples, and Dictionaries
4	09/15/2025 - 09/22/2025		Online	Python Modules and Visualization: math, statistics, matplotlib
	09/17/2025	Wed	Lab	Practice: Using math/stats modules, Creating Basic Charts with matplotlib
5	09/24/2025	Wed	Lab	Midterm Review: Python Programming Concepts & Practice
	09/26/2025 - 09/27/2025	Weekend	Exam	Midterm Exam: Python Programming
6	09/29/2025 - 10/06/2025		Online	Data Mining Concepts: Supervised vs. Unsupervised Learning
	10/01/2025	Wed	Lab	Practice: Exploring a Dataset with Pandas
7	10/06/2025 - 10/13/2025		Online	Data Preparation and Evaluation: Cleaning, Encoding, Normalization
	10/08/2025	Wed	Lab	Practice: Cleaning Data, Encoding Categorical Variables, Normalizing Features
8	10/13/2025 - 10/20/2025		Online	Classification Models I: Regression, Decision Trees, Naïve Bayes
	10/15/2025	Wed	Lab	Practice: Implementing Regression, Decision Trees, Naïve Bayes Using scikit-learn
9	10/20/2025 - 10/27/2025		Online	Classification Models II: SVM, Neural Networks, and Clustering
	10/22/2025	Wed	Lab	Practice: Applying SVM, Neural Networks, and Clustering Techniques
10	10/29/2025	Wed	Lab	Midterm Review: Data Mining Concepts & Practice
	11/01/2025 - 11/02/2025	Weekend	Exam	Midterm Exam: Data Mining
11	11/03/2025 - 11/10/2025		Online	NLP in the Era of Pretrained Models
	11/05/2025	Wed	Lab	Practice: Running Sentiment Analysis with HuggingFace Transformers
12	11/10/2025 - 11/17/2025		Online	Understanding and Preprocessing Business Text
	11/12/2025	Wed	Lab	Practice: Cleaning Text, Tokenizing, and Computing Readability Scores
13	11/17/2025 - 11/24/2025		Online	Applying Pretrained Models to Business Problems
	11/19/2025	Wed	Lab	Practice: Performing Topic Classification and Summarization
14	11/24/2025 - 12/01/2025		Online	NLP Visualization & Evaluation: Word Clouds, Metrics, Explainability
15	12/01/2025 - 12/05/2025		Online	Project Showcase & API Integration
	12/03/2025	Wed	Lab	Practice: Creating an NLP Dashboard and Peer Project Review
	12/06/2025 - 12/07/2025	Weekend	Exam	Final Exam: Natural Language Processing