PURDUE UNIVERSITY | Mitchell E. Daniels, Jr. School of Business

MGMT17300 – DATA MINING LAB

Semester Year: Fall 2024 **Credit Hours:** 1
Meeting Time: Mondays, 2:30-3:20pm **Location:** HAMP 3144
Prerequisites: None

CONTACT INFORMATION & OFFICE HOURS

Instructor: Davi Moreira
Office: YONG 414
Office HR: **- Group (Zoom):** M 4-5:00pm, Link: https://purdue-edu.zoom.us/j/9397534582
- Individual Appointments (Zoom): Book time with me, or by appointment.
Contact: dmoreira@purdue.edu or by appointment
Note: Email responses are typically within 24 hours. If for some reason you do not have a response by the 24-hour mark, please email me again.

COURSE DESCRIPTION

Course Objective:
This course is tailored for students who are either new to the dynamic field of business analytics or possess a strong interest in establishing a foundational understanding of modern data-driven decision-making. In contrast to a sole focus on areas like data mining, machine learning, or information management systems, this course aims to furnish students with a holistic grasp of the multifaceted roles performed by diverse data and analytics disciplines within the intricate landscape of business decision-making. By reviewing numerous real world business cases and engaging in the exploration of two data mining case studies, the course facilitates an experiential learning process. This process emphasizes the interconnected nature of these disciplines, contributing to the cultivation of a thorough comprehension of data-driven decision-making. This heightened understanding empowers students to thoughtfully select their advanced analytics courses and strategically navigate their individual paths toward specialized or advanced training in fields aligned with data analytics.

Course Outcomes: By the conclusion of this course, students will have the ability to:

1. Grasp a holistic view of the three technical pillars that support contemporary data-driven decision-making: data management, business analytics, and data science.
2. Acknowledge the vital role of structured business data and enterprise data management/analytics infrastructure in facilitating efficient data-driven decision-making.
3. Gain foundational knowledge in utilizing powerful analytics tools like R and RStudio.
4. Make informed decisions in navigating advanced business information management and analytics proficiency developments.

COURSE STRUCTURE

The course is designed to promote a comprehensive learning experience through a blend of reading materials and practical exercises. Weekly class sessions will be primarily dedicated to discussions and demonstrations, enriching your understanding of the subject matter.

Course Brightspace: The official material, information, and important announcements about the course will be posted on Brightspace. You should check the course website regularly.

Course Website: https://davi-moreira.github.io/2024F_data_mining_MGMT173/
This is an additional and supplemental source of material for our course

COURSE REQUIREMENTS

- A laptop or desktop with internet access and the capability to install and run R and RStudio.
- Purdue Brightspace account, which will serve as the platform for sharing, tracking, and archiving course-related info, including the syllabus, exams, projects, and earned scores.
- e-textbook: "Modern Data-Driven Decision Making: with practices in data mining and R", by Zhiwei Zhu, © Copyright Digital and AI Literacies 2023. (Draft version available in the course Brightspace page).

ASSESSMENTS/ASSIGNMENTS

Course Grading:

The final grade will not hinge on a mere point count or percentage. Per the School of Business Undergraduate Grading Policy, the target grade distribution for elective courses culminates in an average GPA of 3.3. To comply with this policy, the final course letter grades will be based on the curved class final course percentages. The final course percentage is based on a weighted percentage computed using the weights shown in the table below:

Attendance and Participation	7%
Quizzes	18%
Exercises	25%
Project	25%
Virtual Final Exam	25%

Course Assignments:

Beyond comprehension of textbook content, this course accentuates the refinement and assessment of students' proficiencies in analytical communication and team collaboration. These skills, integral to a prosperous career in today's business milieu, are coined as the "Successful Career 3Cs." To excel in the course, it is equally vital to provide accurate responses in assignments and exams, as well as actively engage in both class and team activities. Evaluation of students' overall achievements will be quantified using a performance score system, encompassing a maximum of 100 points, as delineated below:

Attendance and Participation

Attend your classes, pay attention and participate. If you do not attend class, you will likely not succeed. According to the University regulations, "Scheduled courses allow students to avoid conflicts and reflect the University's expectation that students should be present for every meeting of a class/laboratory for which they are registered." The instructor will take random attendance and keep the attendance record based on participatory activities. Your attendance/participation grade will be based on this record.

Quizzes

Individual timely completion of pre-class readings will be covered by quizzes questions to be submitted before each class (starting before the second class).

Exercises

Individual post-class exercises demonstrating your engagement with the course content (starting after the first class).

Project

In groups up to 6 members (no less than 5 members), students must submit a team's project report presentation on Brightspace, showcasing a practical application of the learned concepts. A guideline document will be shared by the instructor after Lesson 10.

Virtual Final Exam

A one and a half hours of online final exam hosted on Brightspace to assess your overall understanding of the course material.

Please note that:

- The final exam will be conducted individually, online and is open book.
- It will take place on the date assigned in the schedule. You must start your exam between the starting time and ending times. At or after the ending time, the exam will not be available for starting.
- The duration of the exam is one hour. Once you begin the exam, it must be completed within 1.5 hours.
- The exam will conclude at the end of your 90 minutes by an automatic submission.
- It is your responsibility to ensure you have a functional computer, a reliable network connection, and follow exam schedule.
- On the day of the exam, I will be available during multiple one-hour office hour slots to answer any content-related questions you may have. You can join these sessions using the Office Hours link.

COURSE POLICIES

- Abide by Purdue University's academic regulations, consulting your academic advisor for precise details.
- Promptly engage with the instructor for any inquiries, suggestions, or requests for assignment extensions in the event of necessary absence.
- Ensure the punctual submission of all assignments using the designated platform and adhering to the specified format. Late submissions will not be entertained without a pre-approved extension.
- Actively participate in all course-related activities, encompassing class sessions, discussions, and team projects. Stay informed by keeping an eye on emails and on announcements posted on Brightspace.

AI policy

I encourage you to use AI tools you believe will enhance your individual or group learning performance. Learning to use AI is a valuable and emerging skill, and I am available to provide support and assistance with these tools during office hours or by appointment.
Be aware of the following guidelines:

- You are **not** allowed to use AI tools during the exams.
- Providing low-effort prompts will result in low-quality outputs. You must refine your prompts to achieve desirable outcomes. Use the course knowledge for that!
- Make the AI tool help you in your learning process. Do not ask for solutions, ask for explanations, for examples, present your doubts about a topic, and interact and with it!
- Do not blindly trust the information provided by the output. Any errors or omissions resulting from using the AI tool will be your responsibility. Remember, the AI tool works better for topics that you already understand.
- While AI is a tool, you must acknowledge its use. Always cite! Include a short note at the end of any document to mention that you used AI in its development.

Academic Integrity: Please refer the University Policies on Brightspace.
Accessibility and Accommodations: Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

- CAPS Information: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

Non-Discrimination Statement: Please refer to the Nondiscrimination Statement on Brightspace.
Emergency Situation(s): Please refer to the Emergency Preparedness on Brightspace.
Subject to Change Policy: While I will try to adhere to the course schedule as much as possible, I also want to adapt to your learning pace and style. The syllabus and course plan may change in the semester.

TENTATIVE COURSE SCHEDULE

Date	Topic	Assignment (due dates on Brightspace)
8/19/24	Lesson 1: Technical Enablers of Modern Data-Driven Decision Making	Quiz #1 Exercise #1
8/26/24	Lesson 2: Data Organization for Using Data to Drive Decisions	Quiz #2 Exercise #2
9/2/24	**No class* - Labor Day - Lesson 3: Tools for Using Data to Drive Decisions**	Quiz #3 Exercise #3
9/9/24	Lesson 4: Introduction to R and RStudio	Quiz #4 Exercise #4
9/16/24	Lesson 5: Installing Packages and Importing Data in R	Quiz #5 Exercise #5
9/23/24	Lesson 6: Data Types and Viewing Data Types in R	Quiz #6 Exercise #6
9/30/24	Lesson 7: Key Steps of Performing Data Mining in R	Quiz #7 Exercise #7
10/7/24	**No class* - Fall Break - Lesson 8: Most Applied Data Mining Techniques**	Quiz #8 Exercise #8
10/14/24	Lesson 9: Exploratory Data Analysis in R: Summary Statistics	Quiz #9 Exercise #9
10/21/24	Lesson 10: Exploratory Data Analysis in R: Visualization and Dashboarding	Quiz #10 Exercise #10
10/28/24	Lesson 11: Mine Data through Predictive Modeling in R	Quiz #11 Exercise #11
11/4/24	Lesson 12: Identifying Significant Predictors	Quiz #12 Exercise #12
11/11/24	Lesson 13: Predictive Model Interpretations and Predictions	Quiz #13 Exercise #13
11/18/24	Lesson 14: Evaluating Predictive Model Performance	Quiz #14 Exercise #14
11/25/24	Lesson 15: Bringing It All Together: From Data to Insights to Decisions	Quiz #15 Exercise #15 Final Project Submission
12/2/24	**Project presentation**	**Project presentation**
12/9/24	**Virtual Final Exam, due to 11:59 pm**	**Instructor availability:** **9 am - 10 am, 11 am – 12 pm, 3 pm – 4 pm, 7 pm – 8 pm.**

* Please note that for the two classes missed due to holidays and breaks, there will be no make-up sessions. However, students are expected to independently complete the assigned readings and exercises during these periods. While class discussions won't take place, engaging with the materials and teammates will ensure you stay on track with the course content.