ISM 6136 Data Mining

Sections 020 and 350

Instructor

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Class Information

Location: Online only

Time: No meeting times, asynchronous delivery only

Office Hours: By Appt.

Course Description and Objectives

The past few years have seen an unprecedented explosion in the amount of data collected by businesses and have witnessed enabling technologies such as database systems, visualization tools and statistical and machine learning algorithms reach industrial strength. These trends have spawned a new breed of business analytics systems that go significantly beyond reporting capabilities, to support predictive modeling and the extraction of business insights from data. These trends have also created a new role of "data scientists" who are professionals with expertise in the concepts and tools necessary for the skilled use of these systems. Understanding the power and limitations of these technologies can provide business managers and information systems professionals new approaches to support the task of solving hard business problems using data-driven approaches. This course will provide an understanding of fundamental data science concepts, techniques and business applications.

General Learning Outcomes

- Demonstrate understanding of specific data mining methods
- Describe different ways in which models can be evaluated
- Use data mining tools to build descriptive and predictive models
- Analyze a dataset using data analytics methods

- Describe global business scenarios where data and data mining can be applied

Text and Readings

There is no textbook. Online links to readings will supplement the custom course content.

Course Work & Grading

Type of Work	Number	Points Each	Points	% of Total
Quiz	5	10	50	20%
Individual Assignment	5	10	50	20%
Group Project 1	1	30	30	12%
Group Project 2 (Final)	1	60	60	24%
Final Exam (Cumulative)	1	60	60	24%
			250	**100%**

There are six quizzes. The quiz with the least score will be dropped and only the remaining 5 quiz scores will be used for the final grade. Quizzes are open book, but no consultation or online lookup is allowed.

Letter Grades (% of total points)

Scores will be rounded up or down using the usual rounding rules. To adhere to consistency, academic integrity, and fairness to everyone, requests for extra points in order to achieve the next higher letter grade for any reason will not be fulfilled. Exceptions for makeup work are provided only for true, documented emergencies or based on guidance from the University due to any extraordinary circumstances.

Minimum Score	Maximum Score	Letter Grade
95%	100%	A+
90%	94%	A
85%	89%	B+

80%	84%	B
75%	79%	C+
70%	74%	C
60%	69%	D
0%	59%	F

Detailed Syllabus (All times in US Eastern Time)

Week	Dates	Topic	Task	Available	Due
1	Aug 21 - Aug 27	**Introduction to Data Mining** • Overview of Data Mining • Schedule • Analytic Thinking and Value	First Day of Attendance	Aug 21, 12:00 am ET	Aug 25, 11:59 pm ET
			Quiz 1	Aug 25, 12:00 am ET	Aug 27, 11:59 pm ET
2	Aug 28 - Sep 3	**Structured Analytic Process** • The 10-step Process • Evaluating Models: Scientific Methods	Assignment 1	Aug 21, 12:00 am ET	Sep 3, 11:59 pm ET
			Quiz 2	Sep 1, 12:00 am ET	Sep 3, 11:59 pm ET
3	Sep 4 - Sep 10	**Classification** • Classifiers • Evaluating Classifiers • The Confusion Matrix	Quiz 3	Sep 8, 12:00 am ET	Sep 10, 11:59 pm ET
4	Sep 11 - Sep 17	**Decision Trees** • Decision Trees & Their Quality • Using Decision Trees • Classification & Prediction	Assignment 2	Sep 4, 12:00 am ET	Sep 17, 11:59 pm ET
			Quiz 4	Sep 15, 12:00 am ET	Sep 17, 11:59 pm ET

5	Sep 18 - Sep 24	**Neural Networks, Unsupervised Learning (Similarity-Based Learning)** • Neural Networks • Clustering & k-Means	Assignment 3	Sep 11, 12:00 am ET	Sep 24, 11:59 pm ET
			Group Project 1	Sep 4, 12:00 am ET	Sep 24, 11:59 pm ET
			Quiz 5	Sep 22, 12:00 am ET	Sep 24, 11:59 pm ET
6	Sep 25 - Oct 1	**Association Rules & Market Basket Analysis**	Assignment 4	Sep 18, 12:00 am ET	Oct 1, 11:59 pm ET
7	Oct 2 - Oct 8	**Recommendation Systems** • Collaborative Filtering • Recommender Systems	Assignment 5	Sep 25, 12:00 am ET	Oct 8, 11:59 pm ET
			Quiz 6 (Week 6 material - Optional Makeup)	Oct 6, 12:00 am ET	Oct 8, 11:59 pm ET
8	Oct 9 - Oct 13	**Final Project and Exam**	Group Project Final	Sep 18, 12:00 am ET	Oct 13, 11:59 pm ET
			Final Exam	Oct 13, 12:00 am ET	Oct 15, 11:59 pm ET

Late Submission

Late submission on assignments incurs 10% penalty per day.

Extra Credit and Make Up Work

There is no extra credit or make up work available. Quizzes or exams will not be re-opened in case of issues with your computer. It is your responsibility to keep your computer and wifi in full working order. Widespread network failures will be dealt with on a case-by-case basis and in accordance with University guidelines.

Online Exam Proctoring Policy and Notification

All students must review the syllabus and the requirements, including the online terms and video testing requirements, to determine if they wish to remain in the course. Enrollment in the course is an agreement to abide by and accept all terms. Any student may elect to drop or withdraw from this course before the end of the drop/add period.

Online exams and quizzes within this course may require online proctoring. Therefore, students will be required to have a webcam (USB or internal) with a microphone when taking an exam or quiz. Students understand that this remote recording device is purchased and controlled by the student and that recordings from any private residence must be done with the permission of any person residing in the residence.

To avoid any concerns in this regard, students should select private spaces for the testing. The University library and other academic sites at the University offer secure private settings for recordings and students with concerns may discuss location of an appropriate space for the recordings with their instructor or advisor.

Students must ensure that any recordings do not invade any third-party privacy rights and accept all responsibility and liability for violations of any third-party privacy concerns.

Students are strictly responsible for ensuring that they take all exams using a reliable computer and high-speed internet connection. Setup information will be provided prior to taking the proctored exam. To use Honorlock students are required to download and install the Honorlock Google Chrome extension (Links to an external site.)." For additional information please visit the USF online proctoring student FAQ (Links to an external site.) and Honorlock student resources

Policy Statements

https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx.

Course Policy on Acceptable Use of Generative AI Tools

Purpose: The purpose of this policy is to foster a dynamic learning environment that encourages technological adaptation, innovative thinking, and the ethical use of AI resources in academic endeavors.

Policy:

1. *Definition of Generative AI Tools: Generative AI tools refer to any artificial intelligence-powered software, program or application that can generate content, including but not limited to text, visuals, music, and other creative outputs. Examples of these tools include AI text generators, AI content rewriters, AI graphic generators, etc.*
2. *Permitted Use: The use of generative AI tools is permitted for learning and presentations, but not for the individual lab work in projects (use in writing industry overviews is permitted), lab work in assignments, quizzes, and exams. For permitted use, students must responsibly use these tools, adhering to the guidelines outlined in this policy.*
3. *Student Responsibility: Students are responsible for appropriately using generative AI tools in their work. This includes:*
    - *Citing all AI-generated content used in their submissions.*

- *Demonstrating a deep understanding of the subject matter, not solely relying on AI-generated content. Cross-reference claims and statements with original sources and providing appropriate citations are expected.*
- *Using AI tools as a supplemental resource (i.e., as an editor), not as the primary means of completing assignments.*
- *Understanding that generative AI tools, while powerful, are not infallible and can produce misinformation or inaccurate results. Students are responsible for the accuracy of their submissions and must cross-verify the information produced by these tools with reliable sources.*

4. *Violation Consequences: Misuse of AI tools, including use of AI that undermines the student learning objectives of the course or assignment, failing to cite AI-generated content, relying too heavily on AI for work completion, or submitting inaccurate information generated by AI tools, will be subject to academic penalties. Consequences may range from a reduction in an individual assignment grade to larger academic sanctions per USF policy, depending on the severity of the violation (USF Regulation 3.027).*
5. *Exceptions: If there are specific assignments where the use of AI tools is not appropriate, these will be clearly marked in the assignment guidelines. Students must adhere to these specific instructions.*
6. *Questions and Clarifications: If students are unsure whether a tool they wish to use qualifies as a generative AI tool, or if they have questions regarding the allowable use of such tools, they should consult with the course instructor before using it.*