

DA 220 – Data Mining Syllabus

Course Philosophy:

Human decisions play a central role in transforming analytical findings into business actions.

Textbook:

Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques (Morgan Kaufmann Series in Data Management Systems) 4th Edition [ISBN-13: 978-0128042915, ISBN-10: 0128042915]

Data Mining for Business Analytics: Concepts, Techniques, and Applications with XLMiner®, Third Edition by Shmueli (978-1-118-72924-3)

Software:

All students must have a complete installation of Weka (Waikato Environment for Knowledge Analysis) and XLMiner® for Education. (XLMiner® is a trademark of Frontline Systems Inc.)

Course Description:

This course introduces students to the key concepts in the field of Data Mining and enhances understanding of the issues that business organizations face. Electronic data capture has become inexpensive and ubiquitous as a by-product of innovations such as the internet, e-commerce, electronic banking, control systems, point-of-sale devices, bar-code readers, and intelligent machines. Data mining is a rapidly growing field that is concerned with developing techniques to make intelligent use of this data. The field of data mining has evolved from multiple disciplines including statistics, database management, and artificial intelligence. This course will examine methods that have emerged from these fields that have proven valuable in recognizing patterns and making predictions. Specifically this course will introduce students to data ethics, multiple data mining techniques and the Cross Industry Standard Process for Data Mining (CRISP-DM). This course will provide an opportunity for hands-on experimentation with algorithms for data mining using easy-to-use software and cases.

Course Learning Goals:

After completing this course, you will be able to:

- Articulate the role of data mining in decision-making
- Apply ethical principles to data mining models
- Perform data processing and analysis
- Demonstrate data mining principles and use various data mining tools
- Evaluate the output of data mining for decisions and practical application

Course Model:

This course is project-focused. A large percentage of your grade will be based on a final class project and course reflection. The final project, to be completed individually or in groups. This final project will involve either (1) design of a data mining system that addresses a current business problem, or (2) the design of a data mining research system. Your aim with your course project should be to support

your professional goals, while at the same time demonstrating excellence in the topic matter of this course.

It is expected that all students complete the assigned readings assigned homework, and complete the materials in each module such as PowerPoints, podcasts, and videos. The content from these reading and materials will be included in graded quizzes. Also all students are expected to both lead and participate in class discussions.

Course Assessment

- Course Project (45%), (5% for Project plan, 40% for Completed Project)
 - Course Reflection (10%)
 - Assignments (10%), (2 @ 5% each)
 - Recap Quizzes (15%), (4@5% lowest score will be dropped)
 - Discussion Leadership and participation (20%);
- (Discussion Plan : Week 1 ethics - instructor led (5 points for participation) then: 5 discussions @2 points each (participation), plus one student led discussion (5 point) (leadership). Each student is required to lead one discussion (individually or in a group)

Course Assessment Total : [Project 45%, Reflection 10%, Assignments 10%, Quizzes 15%, Discussions 20%]

Course Grading Scale

A = 94 to 100 A- = 90 to 93.99 B+ = 87 to 89.99
 B = 83 to 86.99 B- = 80 to 82.99 C+ = 77 to 79.99
 C = 73 to 76.99 C- = 70 to 72.99 D+ = 67 to 69.99
 D = 60 to 69.99 F = 59.99 or below INC

Course Structure

This course consists of 6 modules. The estimated time to complete weekly content is 10 hours per week.

The following table outlines the course.

Week 0: Pre-Course Preparation

- a. Self – Introduction
- b. Getting Systems Ready- set up: Weka and XLMiner
- c. Complete Syllabus Quiz

Module, Title, Week #	Reading	Assignment
Module 1 – Business Understanding, Week1	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 1 Data Mining for Business Analytics: with XLMiner - Chapters 1 & 2	Student Lead discussion assigned Syllabus Quiz Self -Introduction
Module 2 – Data Understanding Week 2	Data Mining, Fourth Edition: Practical Machine Learning Tools and	Assignment 1 due Data Mining Ethics discussion due

	Techniques – Chapter 2 & Chapter 8.1-8.2	
Module 3 – Data Preparation Part 1 - Week 3	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 3 Data Mining for Business Analytics: with XLMiner - Chapter 3	Student lead discussion(s) due Course Project Topic/Plan due (5% of Grade) Recap Quiz 1 due
Module 3 – Data Preparation Part 2- Week 4	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 4 Data Mining for Business Analytics: with XLMiner - Chapters 4 & 5	Student lead discussion(s) due Recap Quiz 2 due
Module 4 – Modeling, Part 1 Week 5	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 6 Data Mining for Business Analytics: with XLMiner - Chapters 7 & 9	Student lead discussion(s) due
Module 4 – Modeling Part 2 , Week 6	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 9 Data Mining for Business Analytics: with XLMiner - Chapter 8	Recap Quiz 3 due Assignment 2 due
Module 4 – Modeling Part 3 Week 7	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 10 Data Mining for Business Analytics: with XLMiner - Chapter 6 & 10	Student lead discussion(s) due Recap Quiz 4 due
Module 5 – Data Evaluation – Week 8	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 5 Data Mining for Business Analytics: with XLMiner - Chapters 11 & 12	Student lead discussion(s) due

Module 5 – Data Evaluation - Week 9	Data Mining, Fourth Edition: Practical Machine Learning Tools and Techniques – Chapter 11 Data Mining for Business Analytics: with XLMiner - Chapters 13	
Module 6 – Deployment - Week 10	Case Study	Course Reflection due Data Mining Project due week 11

Working In Groups

Working in project groups may be new for some of you and can be challenging for all. Spend time at the start of the course learning about your prospective group members. Remember you will have a better group experience if all are open to diverse talents and interest, but united in goals and compatible in work habits. Should you encounter problems in group work, please contact the instructor as soon as possible. Most group problems can be resolved if they are addressed promptly. In extreme cases, we may rearrange groups.

Work And Expectations

For details about the course project, reflection, assignments, discussion leadership, and other deliverables in the course, please see the course webpage <https://d2l.depaul.edu/d2l/le/content/643548/Home>

Discussion Forums

Discussion Forums are an important component of your online experience. This course contains discussion forums related to the topics you are studying each week. For requirements on your participation in the Discussion Forums, please see grading rubric for each discussion. Also a Course Q & A discussion forum has been established to manage necessary, ongoing social and administrative activities. This is where the management and administrative tasks of the course are conducted, and where you can ask ‘process’ questions and receive answers throughout the course. Please feel free to answer any question if you feel you know the answer; this sharing of information is valuable to other students.

Discussion Leadership

Being the discussion leader in this course is a critically important role, and this importance is reflected in the prominence of discussion leadership in the course’s grading structure. Success as a discussion leader leads to individual rewards – e.g. command of the week’s material at a unique depth – but also substantially improves the experience of your colleagues in the course. Failure as a discussion leader... Well, that leads to the opposite of both the former and the latter.

Each student is required to lead one or more discussion(s) on a course discussion topic (you may do this individually, in pairs, or small groups). The discussion leadership size you choose will remain in place throughout the course. As a discussion leader, it is your responsibility to do a presentation with a maximum 150 word count on the most important topics in the readings, identify subjects for class deliberation, plan and implement a brainstorming session around a particularly appealing idea, and so on. The best discussion leaders will incorporate materials outside on the assigned readings. Each student will be assigned the week to lead the discussion. Discussion topics must be posted at least one week prior, in the Discussion forum for the assigned week of the scheduled discussion. Discussion topics must be derived from course material, and limited to the current week of the discussion or the week prior. Discussion topics must be unique from any topic selected by other students. Should you choose to pair with another student scheduled to lead a discussion in the same week, each student still must submit a topic and indicate the name of the other student in the pairing. The week of the discussion and up to one week afterwards, discussion leaders are responsible to reply to each student comment associated with the discussion, at least once.

Your Tasks as a Discussion Leader

I have designed this course to have a series of scaffolds to facilitate your success as a discussion leader. These scaffolds manifest into the following tasks

Due 1 week ahead of your discussion week (Wed.): Put together a “Discussion Plan” that contains the following information:

- o Pick a topic and post it on the discussion forum
- o Identify a list of additional material you plan to cover in your Wednesday presentation (Should be at least 3+ additional “paper units”).
- o Identify at least 5 discussion questions you plan to answer in your presentation
- o Suggestions for new questions the discussion may raise and helpful additional reading/information
- o Lead discussion on Wednesday
- o Respond to comments by the following Wednesday

Grading Policies and Practices

To complete the course, you must complete each of the assignments as described in the course and submit them to your instructor by the assigned deadline. In addition, you must participate in the course discussion forum by responding to all instructor requests and by interacting with fellow classmates as necessary.

Completed work must be uploaded on D2L. This includes all assignments and the course Project. The discussions and recaps are completed on D2L. The due dates for each of the assignment are on the course calendar. All late submissions without an approved extension will receive a 5% penalty for each day late. All coursework, with or without an approved extension, must be turned in by the end of the 11th week. After which, no submissions will be accepted.

All assignments will be graded within 14 days of receipt. A course grade will be submitted by the university deadline defined by DePaul University Academic Affairs.

General Assessment Criteria for All Writing Assignments

All writing assignments are expected to conform to basic college-level standards of mechanics and presentation. Consider visiting the Writing Center to discuss your assignments for this course or any others. You may schedule appointments (30 or 50 minutes) on an as-needed or weekly basis, scheduling up to 3 hours worth of appointments per week. Online services include Feedback-by-Email and IM conferencing (with or without a webcam). All writing center services are free. Writing Center tutors are specially selected and trained graduate and undergraduate students who can help you at almost any stage of your writing. They will not do your work for you, but they can help you focus and develop your ideas, review your drafts, and polish your writing. They can answer questions about grammar, mechanics, different kinds of writing styles, and documentation formats. They also can answer questions and provide feedback online, through IM/webcam chats and email.

Obviously, the tutors won't necessarily be familiar with every class or subject, but they are able to provide valuable help from the perspective of an interested and careful reader as well as a serious and experienced student-writer. Schedule your appointments with enough time to think about and use the feedback you'll receive.

To schedule a Face-to-Face, Written Feedback by Email, or Online Appointment, visit www.depaul.edu/writing.

All writing assignments should be original work with attribution given to any portion of the work substantially derived from or copied from another source. References should comply with APA formatting. This course uses online systems to identify plagiarisms and course points will be deducted for each occurrence.

Assignment Submission Policy

All assignments **MUST** be submitted in the Desire2Learn (D2L) course application and submitted on-time.

Late Homework Assignments or a late Presentation summary will result in a grade reduction of 10% for each day late.

Late a Final Paper or a Late Final project will result in a grade reduction of 25% for each day late.

Questions about an assignment MUST be submitted at least 48 hours or more before the assignment due date.

Course Expectations

Time Management and Attendance

SNL's online courses are not self-paced and require a regular time commitment EACH week throughout the quarter. You are required to log in to your course at least four times a week so that you can participate in the ongoing course discussions. Online courses are no less time consuming than "face to face" courses. You will have to dedicate some time every day or at least every second day to your studies. A typical four credit hour "face to face" course at SNL involves three hours of classroom meeting per week, plus at least three to six hours of study and homework per week.

This course will require at least the same time commitment, but your learning activities will be spread out through the week. If you have any problems with your technology, or if you need to

improve your reading or writing skills, it may take even longer. The instructor should be notified if your life events do not allow you to participate in the course and the online discussions for more than one week. This is particularly important when there are group discussions or you are working as part of a team. If you find yourself getting behind, please contact the instructor immediately.

Your Instructor's Role

Your instructor's role in this course is that of a discussion facilitator and learning advisor. It is not their responsibility to make sure you log in regularly and submit your assignments. As instructor, s/he will read all postings to the general discussion forums on a daily basis but may not choose to respond to each posting. You will receive feedback to assignments.

The instructor may choose to designate "office hours" when s/he will be online and available and will immediately respond to questions. Depending on the instructor, this response may be by email, instant messenger or telephone. Otherwise, you will generally receive a response to emailed or posted queries within 48 hours.

Your Role as a Student

As an online student, you will be taking a proactive approach to your learning. As the course instructor's role is that of a learning guide, your role is that of the leader in your own learning. You will be managing your own time so that you can complete the readings, activities and assignments for the course, and you will also be expected to take a more active role in peer learning.

Please also note that this is a course offered by DePaul University's School for New Learning (SNL), college for undergraduate and graduate degree-seeking students 24 years and older. SNL welcomes the perspectives and encourages the participation of all DePaul students, and students who take this course should respect and be mindful of

SNL's mission in supporting a diverse and inclusive environment. More information about SNL can be found here. <http://snl.depaul.edu>

View this brief demo Taking SNL Online courses in D2L to learn how to navigate through your course.

If you're new to SNL Online see additional resources on the course home page under Student Resources/Getting Started.

Course Netiquette

Online discussions are an important part of your course experience. To ensure a positive learning environment, please follow the following minimum expectations. Use your common sense, as not all situations can be covered:

Be polite

Respect other participants' views or opinions

Think before you write, and ask yourself if you would say the same thing in person

Use positive phrases (i.e., "Good idea!" or "Thanks for the suggestions," etc.)

Be sensitive to cultural differences

Avoid hostile, curt or sarcastic comments

No objectionable, sexist, or racist language will be tolerated

Create a positive online community by offering assistance and support to other participants.

Use correct grammar and syntax

Academic Integrity

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit <http://studentaffairs.depaul.edu/homehandbook.html> for further details.

Plagiarism: Plagiarism is a major form of academic dishonesty involving the presentation of the work of another as one's own. Plagiarism includes but is not limited to the following:

- The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or part, without proper acknowledgement that it is someone else's.
- Copying of any source in whole or part with only minor changes in wording or syntax, even with acknowledgement.

- Submitting as one's own work a report, examination paper, computer file, lab report or other assignment that has been prepared by someone else. This includes research papers purchased from any other person or agency.
 - Resubmitting one's own previous work from a different course or college, without the permission of the current instructor.
 - The paraphrasing of another's work or ideas without proper acknowledgement.
- Plagiarism, like other forms of academic dishonesty, is always a serious matter. If an instructor finds that a student has plagiarized, the appropriate penalty is at the instructor's discretion.

Course Policies

College and University Policies

This course includes and adheres to the college and university policies described in the links below:

[Academic Integrity Policy \(UGRAD\)](#)

[Academic Integrity Policy \(GRAD\)](#)

[Incomplete Policy](#)

[Course Withdrawal Timelines and Grade/Fee Consequences](#)

[Accommodations Based on the Impact of a Disability](#)

[Protection of Human Research Participants](#)

[APA citation format \(GRAD\)](#)

[Additional Course Resources](#)

[University Center for Writing-based Learning](#)

[SNL Writing Guide](#)

[Dean of Students Office](#)

[Changes to Syllabus](#)

This syllabus is subject to change as necessary. If a change occurs, it will be clearly communicated

to students.

Credits

This course was designed and produced by Kurtis Todd and staff at SNL Online of the School for New Learning of DePaul University.

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