

**MBA K723E
Data Mining and Business Intelligence
Fall 2024 Course Outline**

**Information Systems Area
DeGroote School of Business
McMaster University**

COURSE OBJECTIVE

Business intelligence (BI) is a technology-driven process for analyzing data and presenting actionable information to help corporate executives, business managers and other end users make more informed business decisions. Students will learn the concepts, techniques, and applications of data mining for business intelligence through lectures, class discussions, hands-on assignments, and seminar presentations. Data mining and business intelligence is a very important topic not only in IS area but also in other areas such as finance, marketing, supply chain management, healthcare etc. It will help students to advance in their future career.

INSTRUCTOR AND CONTACT INFORMATION

RJC Room: TBD
T. Francescutti
Instructor
francest@mcmaster.ca
Office Hours: by appointment
Class Location: Online

Graduate Teaching Assistant
Andrew Dupuis
Dupuia4@mcmaster.ca – to be
confirmed

Course website: <http://avenue.mcmaster.ca>

COURSE ELEMENTS

Credit Value: 3	Leadership: Yes	IT skills: Yes	Global view: Yes
Avenue: Yes	Ethics: No	Numeracy: Yes	Written skills: No
Participation: Yes	Innovation: Yes	Group work: Yes	Oral skills: Yes
Evidence-based: Yes	Experiential: No	Final Exam: Yes	Guest speaker(s): Yes

COURSE DESCRIPTION

This advanced MBA course introduces basic data mining technologies and their use for business intelligence. Students will learn how to analyze the business needs for knowledge discovery in order to create competitive advantages and how to apply data mining technologies appropriately in order to realize their real business value. Students will gain hands-on experience through assignments and a real-world project or a term paper. The course will cover the following topics:

- The need for business intelligence
- Data mining concepts, methods, and process
- Data mining technologies
- Data mining applications
- Data mining case studies

LEARNING OUTCOMES

Upon completion of this course, students will be able to complete the following key tasks:

- Understand the basic concept of business intelligence
- Understand the basic concept and the process of data mining
- Learn basic data mining technologies
- Learn how to use business intelligence to solve business problems
- Use new technologies such as Python, as well as established technologies such as SQL and Microsoft PowerBI to perform data mining tasks

COURSE MATERIALS AND READINGS

Avenue registration for course content, readings and case materials

➤ <http://avenue.mcmaster.ca>

\$ FREE

NO Textbook is Needed to be successful!

Optional Course Readings:

Microsoft Business Intelligence (FREE for Student)

<http://www.microsoft.com/bi/>

Reputable data mining books

<https://www.dataminingbook.com/>

EVALUATION

Learning in this course results primarily from lectures, Avenue to Learn Discussion forum threads, presentations, as well as assignments. The balance of the learning results from the lectures on strategic concepts, from related readings, quizzes, and from researching your presentations and assignments. All work will be evaluated on an individual basis except in certain cases where group work is expected. In these cases, group members will share the same grade adjusted by peer evaluation. Your final grade will be calculated as follows:

Components and Weights

Assignment	Weighting	Name	Week	Due Date
Assignment 1	10%	10% - Databases	End of Week 4	Oct 6th
Assignment 2	15%	15% - SQL and PowerBI	End of Week 7	Oct 27rd
Assignment 3	15%	15% - Visualizations	End of Week 8	Nov 3rd
Assignment 4	10%	10% - Regression	End of Week 10	Nov 17th
Memos	10%	10% - 2.5% each (4 Memos)	End of Week 3, 5, 7, 9	Sept 29th, Oct 13, Oct 27th, Nov 10th
Capstone Project	40%	40% - Team Project: Business intelligence applications	Week 11	Upload by November 17th - 11:59pm - Group Order TBD

Grade Conversion

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme:

LETTER GRADE	PERCENT	POINTS
A+	90-100	12
A	85-89	11
A-	80-84	10
B+	75-79	9
B	70-74	8
B-	60-69	7
F	00-59	0

COMMUNICATION AND FEEDBACK

Students that are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Associate Dean:

<http://mbastudent.degrootemcmaster.ca/contact/anonymous/>

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Instructors are encouraged to conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery. Instructors should provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

Assignments: The assignments are designed for students to gain hands-on experience of data mining techniques. They will be completed with each student being part of an assigned group.

Participation: No marks are assigned for participation.

Capstone Project: Students are required to present a project that investigates an application, a new trend, or an issue(s) associated with data mining and business intelligence. Students are expected to work in a **team with 3-4 members.**

Midterm and Final Exam(s): There are no exams for this course.

CAPSTONE PROJECT GUIDELINES

Objective:

To present a research topic that investigate the application of, a new trend in, or the issues associated with data mining and business intelligence.

Topic Selection:

The topic of your capstone project may be on any contemporary issue relating to data mining technology and business applications. Topics include but are not limited to the following examples:

- Issues and challenges of big data and business analytics
- Review business intelligence applications in a special field
- Business intelligence case study
- Advances of data mining technologies
- Security and privacy issues of data mining
- Data mining success factors
- New trends of business intelligence

Guidelines:

1. Student create groups consisting of **4-6** members. Students must develop their own team by week 3. Use discussion forms and direct messages if needed to your peers.
2. Each team should create a 15-minute PowerPoint presentation to accompany the video presentation where each team member must be visually and verbally present in the Zoom presentation.
3. Group marks will be calculated using the Capstone Project Rubric on Avenue to Learn
4. Peer Evaluations **MUST** be completed using the Excel document available on Contents and uploaded to the Capstone Project Peer Evaluations Dropbox by midnight before presentations.

ACADEMIC DISHONESTY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at:

www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

AUTHENTICITY/PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course.

The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

MISSED AND LATE ACADEMIC WORK

Missed Assignments

Where students miss a regularly scheduled assignment for legitimate reasons as determined by the Student Experience – Academic (MBA) office, the weight for that test/participation will be distributed across other evaluative components of the course at the discretion of the instructor. Documentation explaining such an absence must be provided to the Student Experience – Academic (MBA) office within five (5) working days upon returning to school.

To document absences for health related reasons, please provide to Student Experience – Academic (MBA) office the Petition for Relief for MBA Missed Term Work and the McMaster University Student Health Certificate which can be found on the DeGroote website at <http://mbastudent.degroote.mcmaster.ca/forms-and-applications/>. Please do not use the online McMaster Student Absence Form as this is for Undergraduate students only. University policy states that a student may submit a maximum of three (3) medical certificates per year after which the student must meet with the Director of the program.

To document absences for reasons other than health related, please provide Student Experience – Academic (MBA) office the Petition for Relief for MBA Missed Term Work and documentation supporting the reason for the absence.

Late Assignments

If you do not obtain a Petition for Relief, then a late penalty will be applied using an escalating deduction. Assignments will receive a penalty equal to the sum of each day's penalty. For example, the penalty for being 1 day late = 1 mark; 2 days late = 3 marks (1 mark for one day late + 2 marks for 2 days late), 3 days late = 6 marks, 4 days late = 10 marks (a score of ZERO for the Assignment).

Capstone Project

Groups may "fire" a member by majority vote after three communication attempts, three missed meetings or not completing their prescribed tasks by a deadline agreed to by the group. If a member is "fired" from the group, they will be responsible for completing the Capstone Project requirements individually.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students must forward a copy of such SAS accommodation to the instructor normally, within the first three (3) weeks of classes by setting up an appointment with the instructor. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

<http://sas.mcmaster.ca>

RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

POTENTIAL MODIFICATION TO THE COURSE

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your registration and continuous participation (e.g. on A2L, in the classroom, etc.) to the various learning activities of MBA XXXX will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

COURSE SCHEDULE & Key Dates

			Meetings, Q&A, Presentations Etc	Office Hours (Prof & TA)
			Optional/Encouraged	As needed
Week	Week of (stating Monday)	Topic	Class (Monday or Tuesday Section)	Day/Time
Week 1	Monday, September 9, 2024	Intro, Project Manager Role, Why Data?	In Person (LIVE)	To be Booked via Email
Week 2	Monday, September 16, 2024	Data Mining and BI Introduction	In Person (LIVE)	To be Booked via Email
Week 3	Monday, September 23, 2024	Databases and Data Warehouses	In Person (LIVE)	To be Booked via Email
Week 4	Monday, September 30, 2024	Data Modelling and SQL	Zoom (LIVE)	To be Booked via Email
Week 5	Monday, October 7, 2024	Business Intelligence Tools	In Person (LIVE)	To be Booked via Email
Week 6	Monday, October 14, 2024	Thanksgiving (no classes) This week to stay on same page in all sections	N/A	To be Booked via Email
Week 7	Monday, October 21, 2024	Visualizations	In Person (LIVE)	To be Booked via Email
Week 8	Monday, October 28, 2024	Python Introduction	Zoom (LIVE)	To be Booked via Email
Week 9	Monday, November 4, 2024	Data Mining and Regression	In Person (LIVE)	To be Booked via Email
Week 10	Monday, November 11, 2024	Catch-up - No Class This Week (Work on Group Capstone Project)	N/A	To be Booked via Email
Week 11	Monday, November 18, 2024	Capstone Project Presentations - Everyone must attend	In Person (Must Attend Live) LIVE	To be Booked via Email
Week 12	Monday, November 25, 2024	Capstone Project Presentations - Everyone must attend	In Person (Must Attend Live) LIVE	To be Booked via Email
Week 13	Monday, December 2, 2024	Close Out	In Person (LIVE)	To be Booked via Email

Assignment	Weighting	Name	Week	Due Date	Upload Approach
Assignment 1	10%	10% - Databases	End of Week 4	Oct 6th	Avenue
Assignment 2	15%	15% - SQL and PowerBI	End of Week 7	Oct 27rd	Avenue
Assignment 3	15%	15% - Visualizations	End of Week 8	Nov 3rd	Avenue
Assignment 4	10%	10% - Regression	End of Week 10	Nov 17th	Avenue
Memos	10%	10% - 2.5% each (4 Memos)	End of Week 3, 5, 7, 9	Sept 29th, Oct 13, Oct 27th, Nov 10th	Avenue
Capstone Project	40%	40% - Team Project: Business intelligence applications	Week 11	Upload by November 17th - 11:59pm - Group Order TBD	Avenue - One Person/Team