

3KE3
Management of Enterprise Data Analytics
Fall 2024 Course Outline

Information Systems
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

This course aims to provide students with in-depth look at specific underlying technologies, and real-world issues related to firm value generation through using data analytics tools. The course provides several opportunities to explore and understand management of enterprise data analytics and artificial intelligence (AI) through several hands-on-activities, the analysis of case examples, and discussions.

INSTRUCTOR AND CONTACT

Dr. Maryam Ghasemaghaei	Kimia Ansari	Javad Emadi	Bitia Mehri
Course Instructor	Teaching Assistant	Teaching Assistant	Teaching Assistant
ghasemm@mcmaster.ca	ansark1@mcmaster.ca	emadichs@mcmaster.ca	mehrib@mcmaster.ca
Office: DSB- A203	Office: DSB- A211	Office: DSB- A211	Office: DSB- A211
Office Hours: by appointment	Office Hours: by appointment	Office Hours: by appointment	Office Hours: by appointment

Class Meeting Times and Locations for <i>Synchronous</i> Sessions			
Section	Days	Times	Location
1	Wednesdays	10:30am-12:20pm	
2	Tuesdays	10:30am-12:20pm	see mosaic for class
3	Mondays	10:30am-12:20pm	locations
All communication will be through course Avenue			

COURSE ELEMENTS

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

COURSE DESCRIPTION

Data Analytics allow organizations to build competitive strategies around data-driven insights and derive value from data. This course provides students with an overview of enterprise data analytics and artificial intelligence (AI). The course addresses some of the basic procedures and controls of Big Data and AI which provide management with a basis for deriving maximum value from analytics projects. This course incorporates a variety of teaching and learning methods including lectures, hands-on-activities, case studies, and readings. The course encompasses managerial, technical, and statistical perspectives, showing how each area is dependent on the other to make enterprise analytics work.

LEARNING OUTCOMES

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

- Understand the concepts of descriptive, predictive, and prescriptive analytics.
- Describe popular data analysis software tools and their applicability, strengths, and weaknesses.
- Be knowledgeable about up-to-date procedures, techniques, and standards to ongoing data analytics projects.
- Understand the concept of Big Data, AI and their characteristics.
- Understand ethical issues related to the management of enterprise data analytics, such as privacy, and security concerns.

REQUIRED COURSE MATERIALS AND READINGS

From Titles bookstore: Sharda, Delen & Turban, “ <i>Business Intelligence, Analytics, Data Science, and AI, 5th edition</i> ” Pearson Canada, 2024	
<ul style="list-style-type: none"> • Digital Version Link to purchase the material: https://campusstore.mcmaster.ca/cgi-mcm/ws/txsub.pl?wsTERMG1=244&wsDEPTG1=COMMERCE&wsCOURSEG1=3KE3&wsSECTIONG1=DAY%20C01&crit_cnt=1	\$65.95

COURSE OVERVIEW AND ASSESSMENT

This is an in-person 2-hour synchronous and 1-hour asynchronous work course. The two hours will consist of mini-lecture, lengthier discussion, and more in-depth discussion of the topics related to the lecture.

Components and Weights

The components of the course grade will be calculated as follows:

Component	Description	%
Midterm	Covers material from BOTH lectures and textbook chapters 1,2,3, and 4 only. This is a closed book exam and will be comprised of multiple choice & true/false questions. The date of the midterm is on Oct. 21-23 (class time) . Check Avenue closer to the date of the exam for more information about the exam.	15%
Final Exam	Covers material from BOTH lectures and textbook chapters 5,6,8, 10 and 11 only. This is a closed book exam and will be comprised of multiple choice & true/false questions. The date of the final exam will be made known once the master final exam schedule is finalized.	25%
Hands-on Assignment 1	“Tableau: Descriptive Analytics” Assignment. This is an individual assignment. More details will be made available on AVENUE once the assignment is released. The assignment will be released on Avenue on Sep. 23 . The due date is Oct. 7 at 9am . The office hours will be announced on Avenue.	9%
Hands-on Assignment 2	“JMP: Descriptive & Predictive Analytics” Assignment. This is an individual assignment. More details will be made available on AVENUE once the assignment is released. The assignment will be released on Avenue on Oct. 7 . The due date is Oct. 28 at 9am . The office hours will be announced on Avenue.	9%
Hands-on Assignment 3	“RStudio: Prescriptive Analytics” Assignment. This is an individual assignment. More details will be made available on AVENUE once the assignment is released. The assignment will be released on Avenue on Oct 28 . The due date is Nov. 11 at 9am . The office hours will be announced on Avenue.	9%
Hands-on Assignment 4	“Excel: PivotTable, Macro, & VBA” Assignment. This is an individual assignment. More details will be made available on AVENUE once the assignment is released. The assignment will be released on Avenue on Nov. 11 . The due date is Nov. 25 at 9am . The office hours will be announced on Avenue.	9%
Weekly online content Quizzes	Weekly online content quizzes cover the content of the chapter/s related to each week. Content quiz is accessible through Avenue → Assessment → Quizzes. Each week test is worth up to 1% of total grade.	9%
Class Participation	Students are encouraged to engage actively in class discussions related to the material being presented by the instructor and TAs.	15%

	Total	100%
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Learning in this course results primarily from assigned readings, class lectures, assignments, and tests. Missed assignments/exams will receive a grade of zero unless the student has submitted and been approved for a Notification of Absence or MSAF.

Exams

There will be two written tests: (1) a midterm exam, and (2) a final exam (this exam will be non-cumulative). Both exams cover concepts from BOTH lectures and the assigned readings and they both are closed-book exams.

Assignments

Four assignments have been devised to help you better understand the related concepts given in the lectures and/or textbook. The objective of the *first assignment* is to provide students with some hands-on experience with Tableau which is one of the most popular tools for visualization. The objective of the *second assignment* is to provide students with some hands-on experience with JMP and how it is used to support decision making in organizations. The objective of the *third assignment* is to provide students with some hands-on experience with RStudio for Optimization, sensitivity analysis and simulation and how this support decision-making in organizations. The objective of the *fourth assignment* is to practice the use of the Pivot Table, Macro, and VBA which help you manage the large volume of data. Details of each assignment will be described in class.

All answers to assignments must be uploaded to Avenue account, as per instruction provided on the assignments.

Assignments will be accepted after the due date, but **a late penalty will apply where 20% will be deducted off the assignment for each day late**. It is each student's responsibility to submit the assignment in advance of the deadline. Note that work-in-progress can be uploaded to AVENUE – the last version uploaded only will be marked.

In-Class Participation

Students are encouraged to engage actively in class discussions related to the material being presented by the instructor. The instructor and the TA will feel free to cold-call on anyone at any time. Hence, it is very important that you prepare for each class. Debate and challenge are important activities that help in the learning process and the willingness of students to engage in such activities with their classmates is appreciated. Opportunities for in-class participation include:

- Taking part in discussions during the lecture part of class by:
 - Engaging in class exercises
 - Asking questions
 - Responding to questions posed by the instructor or other students
 - Making relevant comments on material covered

Name cards and class pictures are used to help give credit for your participation. You must have a **name card** with your **full first and last name** clearly written and displayed in front of you for

every class. If you are absent from any class for a legitimate reason, you should indicate that to the instructor through e-mail so that you are not penalized for lack of participation during that class. Participation marks will be based on both the quantity and quality of your in-class contributions. **Mere attendance in class without participation does not earn you any participation marks. The instructor will strive to give all students equal contribution chances but you have to show interest in participating by raising your hand.**

COMMUNICATION AND FEEDBACK

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 Area Administrative Assistants.

Instructors are required to provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

Instructors may conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

Students who have concerns about the course content, evaluation methods, or delivery should first reach out to the course instructor. If your concern remains unresolved after speaking with the instructor, you may then reach out to the relevant Area Chair for further consideration.

REQUESTING RELIEF FOR MISSED ACADEMIC WORK

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work” and the link below:

<http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/>

Non-Commerce students must follow the Missed Course Work protocols outlined by their home faculty and Program Office.

COURSE MODIFICATION

From time to time there may be a need to remove/add topics or to change the schedule or the delivery format. If these are necessary, you will be given as much advance notice as possible.

GENERATIVE AI

Students are not permitted to use generative AI in this course. In alignment with [McMaster academic integrity policy](#), it “shall be an offence knowingly to ... submit academic work for assessment that was purchased or acquired from another source”. This includes work created by generative AI tools. Also state in the policy is the following, “Contract Cheating is the act of “outsourcing of student work to third parties” (Lancaster & Clarke, 2016, p. 639) with or without payment.” Using Generative AI tools is a form of contract cheating. Charges of academic dishonesty will be brought forward to the Office of Academic Integrity.

ACADEMIC INTEGRITY

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. **It is your responsibility to understand what constitutes academic dishonesty.**

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.

For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
- improper collaboration in group work.
- 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.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's [Academic Accommodation of Students with Disabilities](#) policy.

ACADEMIC ACCOMMODATION FOR 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.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your enrolment in Commerce 3KE3 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.

PLACES TO GET HELP WITH YOUR WORK

- For help with course content, your instructor is the best source for help. Feel free to ask the professor for explanation of any topic covered in the course. Be sure to read the assigned materials before contacting the course instructor. The best way to interact with your instructor is e-mail.
- For help with assignments, it is best to first talk to the Teaching Assistants for the course (contact information can be found above).

COURSE SCHEDULE

**Management of Enterprise Data Analytics
Fall 2024 Course Schedule**

Week	Date	Topic covered	Readings/Assignments
1	Sep. 9-11	Introduction to the course An Overview of Business Intelligence, Analytics, and Data Science	
2	Sep. 16-18	Artificial Intelligence, Robotics, and Smart Systems	
3	Sep. 23-25	Descriptive Analytics I: Nature of Data, Big Data and Statistical Modeling <i>Assignment 1:</i> Tableau: Descriptive Analytics assignment overview	Assignment #1 released
4	Sep. 30-Oct 2	Descriptive Analytics II: Business Intelligence, Data Warehousing, Visualization	
5	Oct. 7-9	Chapters Review for mid-term exam <i>Assignment 2:</i> JMP: Descriptive & Predictive Analytics assignment overview	Mid-term Review Assignment #2 released Deadline for uploading Assignment #1: Oct 7 at 9am PM (14:00).
Oct. 14-16 NO CLASSES – MIDTERM RECESS			
6	Oct. 21-23	Midterm exam	
7	Oct. 28-30	Predictive Analytics I: Data Mining Process, Methods, and Algorithms <i>Assignment 3:</i> RStudio: Prescriptive Analytics	Assignment #3 released Deadline for uploading Assignment #2: Oct.28 at 9am
8	Nov. 4-6	Predictive Analytics II: Text, Web, and Social Media Analytics	
9	Nov. 11-13	Prescriptive Analytics: Optimization and Simulation <i>Assignment 4:</i> Excel: PivotTable, Macro & VBA assignment overview	Assignment #4 released Deadline for uploading Assignment #3: Nov. 11 at 9am
10	Nov. 18-20	New AI-Based Trends in Analytics and Data Science	
11	Nov. 25-27	Ethical, Privacy and Managerial Considerations in Analytics	Deadline for uploading Assignment #4: Nov.25 at 9am.
12	Dec. 2-4	Chapters Review for Final exam	