

BUSADMIN O610
Business Analytics: Generating Insight through Data and Analytics
Fall 2026 Course Outline

Operations Management, DeGroote School of Business
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

In this course, students will develop the analytical mindset and technical skills needed to generate insight from data and communicate findings to business decision-makers. Every session combines conceptual instruction with applied practice. Students work with real datasets using Microsoft Excel and Power BI, and engage with cases that connect analytical methods to real business decisions. Topics include exploratory data analysis, data visualization, sampling and estimation, hypothesis testing, regression analysis and inference/goodness-of-fit, time series forecasting, and a gentle introduction to segmentation and clustering.

INSTRUCTOR AND CONTACT INFORMATION

All Sections
Dr. Behrouz Bakhtiari
Instructor
bakhtib@mcmaster.ca
Office: RJC 233
Office Hours: Announced on
Avenue to Learn
Tel: (905) 525-9140 x23998

Student TA
TA
TBA
Office Hours: TBA

COURSE ELEMENTS

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



COURSE DESCRIPTION

This course is focused on the integration of information into effective decision making for strategic action. Students will explore approaches to organizing and interpreting data and using it as an evidentiary basis for business and economic decisions in organizations. Students will develop and hone proficiencies in asking good questions and using information to make ethical and beneficial decisions that account for the feedback induced by other decision-makers.

The course will emphasize the application of statistical techniques and modeling for business decision-making. The focus is on applying the concepts of statistical inference to the real decision-making problems. The techniques developed in this part of the course can be applied not only to a variety of business problems, but also provide students with the critical skills required to assess the validity, significance, and interpretation of statistical results that they deal with during their education and careers. Topics will include sampling distributions, interval estimation, hypothesis testing, linear regression analysis, etc. Model building in MS Excel using data will also be discussed for most of the topics involved. Visualization and data storytelling will be done using both MS Excel and Power BI.

LEARNING OUTCOMES

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

- Apply exploratory data analysis (EDA) techniques to identify patterns, anomalies, and insights in business datasets
- Design and interpret data visualizations that communicate findings clearly to a non-technical audience
- Apply sampling theory, confidence intervals, and hypothesis testing to support evidence-based business decisions
- Build, interpret, and critique linear and multiple regression models, and use models for prediction
- Apply segmentation techniques, including RFM scoring, decile analysis, and cluster-based methods, to partition data into distinct groups
- Apply quantitative time-series forecasting methods to time-series data and evaluate forecast accuracy using various error measures.
- Analyze business cases using data-driven frameworks to formulate and defend strategic recommendations
- Use MS Excel to apply topics discussed in the course to data and generate insight
- Use MS Excel to build various inference models and interpret results
- Use MS Excel and Power BI for visualization and data storytelling

REQUIRED COURSE MATERIALS AND READINGS

Avenue registration for course content, readings and case materials

➤ <http://avenue.mcmaster.ca>

\$ FREE

OPTIONAL COURSE MATERIALS AND READINGS

Business Analytics (3rd ed.) — James R. Evans, Pearson. Optional reference for students who want extra practice on regression and hypothesis testing. Not required and not tested directly. Available at the campus bookstore or online.

NOTE: Students are strongly recommended to have access to a resource for business analytics. The Evans book mentioned above is a good one. But similar resources (including open access resources) could potentially be used too. If you have any questions, please do not hesitate to reach out to the instructor.

EVALUATION

Components and Weights

Take-Home Assignments	Individual	12%
Power BI Dashboard & Report	Individual	8%
Data Discovery Exercise	Individual	10%
TopHat In-Class Quizzes	Individual	8%
GRIT Week Assignment	Group	5%
Term Project	Group	25%
Final Exam	Individual	32%
TOTAL		100%

Course Deliverables

Assessment	Due Date	End of Week
Assignment 1	Sunday, October 4 at 11:59 PM	4
Power BI Dashboard & Report	Sunday, October 18 at 11:59 PM	6
Assignment 2	Sunday, October 25 at 11:59 PM	7
Data Discovery Exercise	Sunday, November 8 at 11:59 PM	9
Assignment 3	Sunday, November 22 at 11:59 PM	11
Term Project	Monday, December 7 at 11:59 PM	13

Bonus Marks

Students may earn bonus marks by completing optional industry simulations on the [Forage platform](#). Bonus marks are awarded upon submission of a screenshot of the Forage completion certificate via Avenue to Learn.

- BCG X: Introduction to Data for Decision Makers: 1% bonus.
- Tata iQ: Data Visualisation - Empowering Business with Effective Insights: 2% bonus.

Bonus marks are added to the final course grade after all other components are calculated.

Take-Home Assignments (12%-Individual)

Three assignments are submitted through Avenue to Learn over the term. Each consists of data analysis tasks applying methods introduced in class and may require use of Excel or Power BI. Late submissions are accepted but penalized.

Power BI Dashboard & Report (8%-Individual)

Students build a complete Power BI dashboard/report and submit it with a brief written interpretation of their findings. Full instructions are posted on Avenue to Learn. Late submissions are accepted but penalized.

Data Discovery Exercise (10%-Individual)

Students choose a real dataset and use Excel and/or Power BI to uncover a non-obvious business insight. The full requirements document is posted on Avenue to Learn. Late submissions are accepted but penalized.

TopHat In-Class Quizzes (8%-Individual)

Short quizzes administered via TopHat in-class. Quizzes may test comprehension of pre-class case readings, and content from previous lectures. Students must be physically present to receive credit. A laptop or smartphone with TopHat access is required on quiz days.

GRIT Week Assignment (5%-Group)

During GRIT Week (Week 10, November 10–16), student teams complete a structured challenge. Group members receive the same grade.

Term Project (25%-Group)

Teams select a business question, acquire and clean a dataset, conduct a full analysis using methods from the course, and present their findings. Full instructions are posted on Avenue to Learn. Late submissions are accepted but penalized.

Final Exam (32%-Individual)

Comprehensive in-person examination covering all topics from the course. The exam includes both computational questions (in Excel or on paper) and conceptual questions (paper). Date and location are set by the MBA Office and announced later in the term.

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

www.mcmaster.ca/policy/Students-AcademicStudies/UndergraduateExaminationsPolicy.pdf

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+	77-79	9
B	73-76	8
B-	70-72	7
F	00-69	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.degroote.mcmaster.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.

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.

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

Students are responsible for being aware of and demonstrating behaviour that is honest and ethical in their academic work. Such behaviour includes:

- following the expectations articulated by instructors for referencing sources of information and for group work;
- asking for clarification of expectations as necessary;
- identifying testing situations that may allow copying;
- preventing their work from being used by others (e.g., protecting access to computer files); and
- adhering to the principles of academic integrity when conducting and reporting research.

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 ONLINE ELEMENT

All courses use some online 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.

Students may be required to use the Respondus LockDown Browser and Respondus Monitor. The Respondus LockDown Browser is a downloadable program that allows a student to take an Avenue to Learn quiz in a secure environment. Quizzes can be set to use LockDown Browser or LockDown Browser.

For more details about McMaster's use of Respondus Lockdown Browser please go to <https://avenuehelp.mcmaster.ca/exec/respondus-lockdown-browser-and-respondus-monitor/>

The available information is dependent on the technology used. Continuation in a course that uses online 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.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.



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, Teams, 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.

ATTENDANCE

Arriving late or missing class disrupts the learning experience for both you and your peers. Punctuality and attendance are crucial to maintaining a respectful, professional and productive environment for everyone, including our faculty.

Instructors may use Top Hat in their course in a variety of ways, including to capture attendance in their classes. Attendance is recorded by submitting a unique 4-digit code displayed in your physical classroom using your personal device.

MISSED ACADEMIC WORK

Missed Mid-Term Examinations / Tests / Class Participation

Please do not use the online [McMaster Student Absence Form \(MSAF\)](#) as this is for Undergraduate students only. The MBA program will not accept an MSAF.

When students miss regularly scheduled term work which contributes 10% or more to the final grade, for legitimate reasons as determined by the [DSB Student Services – Academic Office](#) (DSSAO (DSB Student Services Academic Office)), the activity necessary to compensate for the missed work will be determined by the course instructor. The compensatory activities assigned will vary with the nature of

the course and the missed requirement. They include, but are not restricted to, an alternative assignment, a rescheduled midterm exam, or re-weighting the marks for the missed component to other mark components. Documentation explaining such missed work must be provided to the DSSAO (DSB Student Services Academic Office) **within five (5) working days** of the scheduled date for completion of the work.

Acceptable reasons for missed work, along with the [Petition for Missed Term Work](#) and the [MBA Student McMaster University Student Health Certificate](#), can be found on the DeGroote MBA Student website (mbastudent.degroote.mcmaster.ca). Please direct any questions about acceptable documentation to the MBA Academic Advisors (askmba@mcmaster.ca).

University policy states that a student may submit a **maximum of three (3)** [Petition for Missed Term Work](#) per academic year, after which the student must meet with the Director of the program.

If term work is missed without an approved reason, students will receive a grade of zero (0) for that component.

Missed Final Examinations

Students must be available for the duration of the posted exam period regardless of their personal exam schedule. This is to ensure student availability throughout the entire exam period in the event that an exam must be rescheduled due to unforeseen circumstances (university closure, power outage, storm policy, etc.). A student who misses a final examination without valid reason will receive a mark of 0 on the examination.

Students who have missed a final exam for a valid reason can apply to the DSSAO ([DSB Student Services Academic Office](#)) to write a deferred examination by submitting an [Application for Deferring a Final Exam](#) with supporting documentation. The application must be made **within five days** of the scheduled exam.

The [Application for Deferring a Final Exam](#) and the [MBA Student McMaster University Student Health Certificate](#) can be found on the DeGroote MBA Current Student website (mbastudent.degroote.mcmaster.ca)

Deferred examination privileges, if granted, are normally satisfied during the deferred examination period as set by the [Office of the Registrar](#).

Requests for a second deferral or rescheduling of a deferred examination will not be considered.

ACADEMIC ACCOMMODATION FOR STUDENTS WITH DISABILITIES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students must activate their accommodation(s) (e.g., extra-time, alone room, etc.) via [mySAS](#) portal



at the beginning of each term, normally, within the first three (3) weeks of classes. 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>

Use of Test Accommodations at McMaster University Burlington Campus Ron Joyce Centre

Whereas Student Accessibility Services (SAS), on Main Campus, determines all MBA student accommodations, the MBA Faculty Office manages the coordination of accommodations for tests, midterms, and exams at the Ron Joyce Centre in Burlington.

Process for Students

- Student Accessibility Services (SAS) now uses the online [mySAS](#) Portal for graduate students to share accommodation letters with their instructors and Faculty/Program. Students are responsible for activating their accommodations each term through the [mySAS](#) Portal. Once activated, an approved accommodation letter will be automatically sent to the instructors associated with the student's enrolled courses for that term.
- Students must engage the DSSAO (DSB Student Services Academic Office) to implement their accommodation(s) (e.g., extra-time, alone room, etc.) for each upcoming test, midterm, or exam, at **least two weeks in advance**. Students can do this by emailing DeGroote MBA SAS scheduling office at DSBSAS@mcmaster.ca or completing the [Accommodation Implementation form](#). If a student cannot meet this deadline, they should contact DSBSAS@mcmaster.ca to discuss alternative arrangements. The program is committed to exploring flexibilities where possible to support students.
- All tests, midterms, and exams are booked synchronously with the class's start time. Any deviations from the start time (e.g. start earlier than the class to enable completion at the same end time) requires a discussion with their instructor on protocol at the time of accommodation activation.
- Students will leverage the accommodation (e.g., extra-time, alone room, etc.), in a designated testing room. Rooms will be booked according to the student's SAS accommodation. Unless the accommodation states otherwise, students should expect that they will be writing in a room with other students. One or more invigilators will always be in the room.
- Following the request to implement the accommodation(s), dsbsas@mcmaster.ca will reach out to the student with their test, midterm, or exam details, including the date, time, and room

number. As there may be other students writing tests in the room, we ask that students enter the room quietly and leave all personal items at the front of the room.

All policies and procedures, including restroom access, how extra-time is allocated for assessments under Universal Design, and the submission of memory aids in advance, are consistent with those of SAS on Main Campus. The only variance in procedure is communication around, and physical location of, assessment. There is not a dedicated testing space at RJC. Existing classrooms and lecture halls will be used for most testing. All SAS-approved accommodations will be honoured by our staff; however, core testing elements are not eliminated in alternative testing formats. Students should expect and plan for invigilation, incidental noise, and other potential distractions.

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 the DSSAO (DSB Student Services Academic Office) ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation. 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.

RESEARCH USING HUMAN SUBJECTS

ONLY IF APPLICABLE

Research involving human participants is premised on a fundamental moral commitment to advancing human welfare, knowledge, and understanding. As a research intensive institution, McMaster University shares this commitment in its promotion of responsible research. The fundamental imperative of research involving human participation is respect for human dignity and well-being. To this end, the University endorses the ethical principles cited in the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans:

<http://www.pre.ethics.gc.ca>

McMaster University has mandated its Research Ethics Boards to ensure that all research investigations involving human participants are in compliance with the Tri-Council Policy Statement. The University is committed, through its Research Ethics Boards, to assisting the research community in identifying and addressing ethical issues inherent in research, recognizing that all members of the University share a commitment to maintaining the highest possible standards in research involving humans.

If you are conducting original research, it is vital that you behave in an ethical manner. For example, everyone you speak to must be made aware of your reasons for eliciting their responses and consent to providing information. Furthermore, you must ensure everyone understands that participation is entirely voluntary. Please refer to the following website for more information about McMaster University's research ethics guidelines:

<http://reo.mcmaster.ca/>

Organizations that you are working with are likely to prefer that some information be treated as confidential. Ensure that you clarify the status of all information that you receive from your client. You **MUST** respect this request and cannot present this information in class or communicate it in any form, nor can you discuss it outside your group. Furthermore, you must continue to respect this confidentiality even after the course is over.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your registration and continuous participation (e.g. on A2L, in the classroom, etc.) to the various learning activities of MBA O610 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.

ARTIFICIAL INTELLIGENCE

The use of generative AI tools (including ChatGPT, Claude, Copilot, and similar) is governed by assessment-specific rules stated in this outline and in individual assignment instructions.

AI IS PERMITTED on the Data Discovery Exercise only. Students who use AI on this assessment are encouraged to include a one-line disclosure in their submission (e.g., "I used ChatGPT to help draft this memo and revised it based on my own data findings"). Disclosure is not graded.

AI IS NOT PERMITTED on Take-Home Assignments, the Power BI Dashboard & Report, TopHat quizzes, the GRIT Week Assignment, the Term Project, or the Final Exam. Submitting AI-generated content as your own work on these assessments constitutes academic dishonesty under the McMaster Academic Integrity Policy.

Students are encouraged to use AI tools for learning — for example, to ask an AI to explain a concept, generate practice problems, or check your understanding of a method. Using AI to do your graded work for you is a different matter and undermines the skills this course is designed to build.

Professionally, you cannot ask AI to read and summarize someone else's case solution for you.

COURSE SCHEDULE

MBA O610 Business Analytics: Generating Insight through Data and Analytics Fall 2026 Course Schedule

Week	Date	Topics & Activities
1	September 8, 2026	The Analytics Mindset Introduction to business analytics What makes a good analyst? Case: Data Science at the Golden State Warriors
2	September 15, 2026	Data Visualization & Storytelling Principles of effective visualization Choosing the right chart Telling a story with data
3	September 22, 2026	Exploratory Data Analysis in Excel Pivot tables Descriptive statistics EDA lab
4	September 29, 2026	Power BI, Power Query & Dashboard Design Connecting and cleaning data Building dashboards Lab
5	October 6, 2026	Sampling & Estimation Sampling distributions Confidence intervals Margin of error
6	October 13, 2026	The Logic of Hypothesis Testing Null and alternative hypotheses p-values Type I and II errors Case: A/B Testing at Vungle (Darden/HBP)
7	October 20, 2026	Hypothesis Testing Applied Two-sample t-tests Interpreting statistical evidence Case: Bark Gift Shop (HBS)
8	October 27, 2026	Regression Analysis I Simple and multiple linear regression Interpreting coefficients Case: Presenting Banking Products (INSEAD)
9	November 3, 2026	Regression Analysis II: Inference & Prediction goodness-of-fit measures Interaction terms Model critique
10	November 10, 2026	GRIT Week Applied group challenge
11	November 17, 2026	Forecasting & Time Series Quantitative Methods Trend and seasonality Error metrics
12	November 24, 2026	Segmentation & Clustering K-means clustering RFM analysis Excel lab Case: Harrah's Entertainment (HBS)
13	December 1, 2026	Integration Week End-to-end analytics challenge Case: Applying Data Science and Analytics at P&G (HBS 121-006) Course wrap-up