BUSADMIN O610
Business Analytics: Generating Insight through Data and Analytics
Fall 2025 Course Outline

Operations Management Area
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

In this course, students will learn and practice deriving managerial insight from evidence provided in the form of data. The course will explore approaches to organizing, manipulating, visualizing, evaluating and analyzing data for various aspects of business analytics. The focus of the course is on applying the concepts of statistical inference as well as regression, prediction and decision making under uncertainty to address business problems. The techniques developed in the course provide students with the critical skills required to assess the validity, significance, and interpretation of statistical results that they encounter in their career. Topics will include, but are not limited to, aggregating and summarizing data, visualization, risk and decision making under uncertainty, sampling distributions, interval estimation, hypothesis testing (single and multiple populations), linear regression analysis (simple and multiple), time series analysis and forecasting. Students use tools such as Power BI and MS Excel and work with data to engage in experiential learning in the course.

INSTRUCTOR AND CONTACT INFORMATION

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

Teaching Assistant:
TBA on Avenue

Course prerequisites: Only open to students registered in level 1 of MBA Full Time and Co-op Programs

Course antirequisites: I602

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COURSE ELEMENTS

Credit Value:	3	Leadership:	No	IT skills:	Yes	Global view:	Yes
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):	Yes

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:

- Understand different aspects of numerical descriptive measures and visualization
- Understand sampling distributions and the statistical relationships between variables.
- Structure interval estimations and interpret them as an inference tool
- Structure and complete a hypothesis test informing some course of action.
- Build relevant regression models and identify common regression pitfalls.
- Interpret regression models and use them to improve forecasting and decision-making.
- 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

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COURSE MATERIALS AND READINGS

- **Avenue registration for course materials: http://avenue.mcmaster.ca**

- **Recommended Textbook**: Business Analytics; Third edition, James R. Evans. Pearson
  The book is available for purchase online. You can also get the textbook at the Campus Bookstore.

EVALUATION

Components and Weights

5 take-Home Assignments	Individual	5x3% = 15%
Data Visualization (integrated)	Individual	7.5%
Power BI Dashboard	Individual	7.5%
GRIT Week	Group	5%
Term Project	Group	30%
Final Exam	Individual	35%
Total		**100%**

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

Course Deliverables

Take-home Assignments (15%) - Individual

Each of these take-home assignments is worth 3% (total of 15%) and should be completed individually. Assignments are submitted on Avenue to Learn. Here are the due dates for the assignments.

Assignment	Due Date
1	11:59PM, Sunday September 21
2	11:59PM, Sunday October 05
3	11:59PM, Sunday November 02
4	11:59PM, Sunday November 16
5	11:59PM, Sunday November 30

Data Visualization (integrated) (7.5%) - Individual

The Data Visualization component consists of two deliverables integrated into two of your other courses: F610 and A610.

- The visualization in your F610 Industry Project will count towards 5% in this course (in addition to the 5% you gain in that course).
- The visualization in your A610 Min-Case Report will count towards 2.5% in this course.

The details of the requirements will be shared with you on Avenue to Learn.

Power BI Dashboard (7.5%) - Individual

The Power BI Dashboard is an individual assignment, where you will create a dashboard based on a dataset provided to you. The assignment also includes a *data cleaning* component. The due date is 11:59PM on Sunday October 26.

Term Project (30%) - Group

This project is worth 25% of your final mark. The details of the project will be shared with you on Avenue to Learn. You will be working with other members in your Learning Group to create a report and presentation slides and submit them on Avenue to Learn. The term project is due at 11:59PM on the last day of the term.

GRIT Week Assignment (5%) - GROUP

This assignment will be submitted during GRIT Week. The information will be shared with you during GRIT week.

Final Exam (35%) - Individual

Your final exam takes place in-person at RJC. The exam will be scheduled by MBA office and the date will be announced on Avenue to Learn. The final exam is cumulative.

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.

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. Attendance will be recorded in each class to help identify students who may be at risk or in need of additional support.
Instructors will be using Top Hat 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.

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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 Student Experience – Academic Office (SEAO (Student Experience 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 SEAO (Student Experience 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 SEAO (Student Experience 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 examination period at the end of the following semester. In select cases, the deferred examination may be written at a time facilitated by the SEAO (Student Experience Academic Office) (Student Experience Academic Office) and agreed to by the course instructor.

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 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

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

- SAS will now be using our online system, MySAS Portal, for graduate students to share accommodation letters with their Instructors and their Faculty/Program. Students will be responsible to activate their accommodations on a term-by-term basis and the approved accommodation letter will be directly sent to the Instructor.

- Students must engage the DSSAO (DSB Student Services Academic Office) to implement their accommodation(s) (e.g., extra-time, memory aid, 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. 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, memory aid, 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 SEAO (Student Experience 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 lectures and course materials, including presentations, tests, outlines, and similar

materials, are protected by copyright. You may use them for personal study only. Uploading or distributing them without my written consent is strictly prohibited.

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 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

Students may find generative AI tools helpful for reviewing course material or for studying, but the use of generative AI is prohibited for work submitted for assessments in the 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 states 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.

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COURSE SCHEDULE

MBA O610
Business Analytics: Generating Insight through Data and Analytics
Fall 2025 Course Schedule

WEEK	CHAPTERS	MATERIAL
Wk of Sep. 08	3,4	Unlocking insight through data exploration and storytelling! *Descriptive Analytics – Visualization*
Wk of Sep. 15	4	Unlocking insight through data exploration and storytelling! *Descriptive Analytics – Visualization*
Wk of Sep. 22	4,5	Finding harmony in chaos: Understanding the uncertainty and risk in processes. *Probability Distributions – Data Modeling*
Wk of Sep. 29	5	Finding harmony in chaos: Understanding the uncertainty and risk in processes. *Probability Distributions – Data Modeling*
Wk of Oct. 06	6,7	Decoding Samples: Unveiling Patterns and Estimating System Parameters *Sampling Distributions – Estimation – Interval Estimates*
Wk of Oct. 13	**GRIT WEEK**	
Wk of Oct. 20	6,7	Decoding Samples: Unveiling Patterns and Estimating System Parameters *Sampling Distributions – Estimation – Interval Estimates*
Wk of Oct. 27	7	Testing Hypotheses: Unveiling Answers and Validating Discoveries. *Inference, Hypothesis Testing*
Wk of Nov. 03	7	Testing Hypotheses: Unveiling Answers and Validating Discoveries. *Inference, Hypothesis Testing*
Wk of Nov. 10	8	Charting Trends: Modeling Relationships and Predicting Outcomes. *Trendlines and Regression Analysis*
Wk of Nov. 17	8	Charting Trends: Modeling Relationships and Predicting Outcomes. *Trendlines and Regression Analysis*
Wk of Nov. 24	8,9	Charting Trends: Modeling Relationships and Predicting Outcomes. And Predicting Tomorrow: Forecasting the Future with Data Insights. *Trendlines and Regression Analysis – Forecasting Techniques*
Wk of Dec. 01	9	Predicting Tomorrow: Forecasting the Future with Data Insights. *Forecasting Techniques*

Note: Depending on class progress, the above schedule may change slightly. If a chapter/section is to be added or removed, it will be announced in class and on Avenue to Learn.