MBA BL602
Economics and Business Statistics
Fall 2022 Course Outline
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

The first part of the course (i.e., Statistics) provides students with the knowledge of fundamental statistical techniques, and their applications in business and economics. The emphasis in the course is neither the mathematical derivation of test statistics, nor the technical proofs for various approaches. Instead, the primary objectives will be on understanding how and when to apply statistical techniques to managerial problems, and on the translation of statistical output into actionable recommendations. To facilitate this, the use of computer software (specifically Excel) is an essential component of the course, allowing students to focus on using statistics to guide the managerial decision-making process.

The second part of the course (i.e., Economics) introduces how the economic paradigm can be used to inform managerial decision making. The tools and techniques of economics provide a framework for assessing the trade-offs faced by managers in a competitive marketplace. These skills will be used to motivate evidence-informed judgments about alternative courses of action to produce creative, action-oriented, practical strategies to business challenges under various market structures.

INSTRUCTOR CONTACT INFORMATION

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COURSE ELEMENTS

Credit Value:	1.5	Leadership:	No	IT skills:	Yes	Global view:	Yes
Avenue:	Yes	Ethics:	Yes	Numeracy:	Yes	Written skills:	Yes
Participation:	No	Innovation:	No	Group work:	Yes	Oral skills:	No
Evidence-based:	Yes	Experiential:	Yes	Final Exam:	No	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 numerical data and utilizing it as an evidentiary basis for economic decisions within the organization. Students will develop and hone proficiencies in asking good questions and using information to make beneficial and ethical decision that take account of the feedback of actions by other decision-making organizations.

The statistics part of 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, hypothesis testing, and regression analysis.

The economics segment of the course develops the fundamental trade-offs faced by organizations regarding production decisions and orients these choices within the framework of various market structures. Managers use the logic of marginal analysis, the analysis and application of demand and cost concepts, and intelligent responses to strategic behavior and to external forces like government policy. Together with statistical and numerical techniques learned earlier, the analytical techniques developed in the second half are used to assess situations and develop courses of action.

COURSE MATERIALS AND READINGS

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

Recommended Textbooks:

➢ Sharpe & De Veaux. Business Statistics, 4th edition
  o Etext only ISBN: 9780135469170
  o Mylab+Etext ISBN: 9780135582084
  o Looseleaf ISBN: 9780136726586
➢ Perloff & Brander. Managerial Economics and Strategy, 3rd ed.
  o Etext only ISBN: 9780135640869
  o Mylab+Etext ISBN: 9780134899701
  o Looseleaf ISBN: Print is only available through the platform after full purchase (digital first delivery for Perloff)

The textbooks listed above are STRONGLY recommended if you do not have other comparable resources you can draw from. You should read up on the topics discussed in the videos and residencies even if you do not purchase these specific texts. Some of the examples used in the course are well developed in the respective texts and the content of the books IS worth paying for, although not strictly required, as support for this course.

Textbooks are available through the McMaster Campus Store.

LEARNING OUTCOMES

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

➢ To understand sampling distributions, with emphasis on comparing population mean and variance
➢ To understand the nature of statistical relationships between variables
➢ To explore regression analysis, including simple linear regression, and multiple linear regression
➢ To be able to identify common regression pitfalls
➢ To learn techniques for selecting appropriate regression models for prediction
➢ To become more familiar with Excel, a commonly used spreadsheet with statistical capabilities
➢ To be able to critically read and understand regression and factorial models in business and research papers
➢ To utilize economic analytical techniques and forms of evidence to support decision-making
➢ To understand and anticipate risks and opportunities in the strategic interplay of competitors
➢ To choose between and defend your choice of optimal responses to economic conditions
➢ To communicate economic concepts and recommendations to others persuasively using clear non-specialist language, in written and verbal form
➢ To develop proficiency with the economic way of assessing and evaluating opportunities in order to have the benefit of this powerful paradigm in decision-making

EVALUATION

Learning in this course results primarily from online videos, lectures, in-class discussions, individual readings, assignments, and tests. Your final grade in this course will be calculated as follows:

Weekly Homework Assignments	10x2% each (individual)	20%
Statistics Group Case	(group)	20%
Statistics Test	(individual)	20%
Economics Industry Project	(group)	20%
Economics Test	(individual)	20%
Total		**100%***

*A penalty of 10% will be incurred to your final course grade if you miss any online webinar sessions

HOMEWORK ASSIGNMENTS (10 x 2% = 20%) - INDIVIDUAL
Each of TEN weekly problem sets is worth 2% for a total of 20%. These will be released over Avenue and should be submitted to the assignment dropbox posted there by Friday 11:59pm EST.

STATISTICS CASE (20%) - GROUP

This individual assignment involves consideration of how best to select winners in a competition with multiple judges (New vs Old). You are required to answer the questions posted to A2L regarding the dataset from the case and to write up a brief report (6 pages, 2000 words max) explaining your choices, analysis, and final determination regarding the winner of the competition described.

STATISTICS TEST (20%) - INDIVIDUAL
The test for the stats portion of the course will take place **Saturday of the second residency (October 15th)** and will be administered via Avenue to Learn as a "quiz". It is open-book, open-note, and you can use a spreadsheet to do your calculations if you like. Be sure to bring your laptop.

ECONOMICS PROJECT (20%) - GROUP
Select a Canadian industry and complete a microeconomic analysis of it to determine whether or not it's an attractive space for a new entrant. You will use the concepts and tools learned throughout the semester to complete a written report as a group. Reports should be approximately 3000 words, and answer the questions provided in the instructions (on A2L).

ECONOMICS TEST (20%) – INDIVIDUAL
This take-home exam (covering only the second half of the course) will involve a mix of quantitative and qualitative questions. Submissions will be checked for plagiarism.

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

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

Participation

All residencies are mandatory and cannot be missed. Students are required to engage actively in discussions related to the material being presented by the instructor, TAs, or other students. The instructor and TAs will feel free to cold-call on anyone at any time. Hence, it is very important that you prepare for every class and case discussion as appropriate. Debate and challenge are important activities that help in the learning process and the willingness of individuals to engage in such activities with their classmates is appreciated. Opportunities for participation include taking part in discussions during the lecture and case discussions in class by: asking questions; responding to questions posed by the instructors or other students; and making relevant comments on material covered.

You must have your **screen** name displayed with full first and last name, during every online session. **Participation at live webinars requires students to be visible via camera to ensure they are actively engaged in the online session**. **By missing an online live webinar, a penalty of 10% will be incurred on your final course grade.** If you must miss an online live webinar, you are expected to inform your course instructor and teaching assistant in writing as soon as possible, preferably five (5) days prior to the webinar. Live webinars will be recorded and, subsequently, made available to all students on Avenue to Learn.

Peer Review Adjustment

The purpose of the peer review adjustment process is to encourage student teams to develop good team management practices and to have team members' contributions to team deliverables reflected in their marks for that work. Experience with group work has shown that most troubles arise because:
    a) individuals do not respect the group process, and/or
    b) there is lack of proper communication among group members.

For teams, an initial group meeting should happen as early as possible so that parameters are set right away (e.g., when the group will meet virtually, what collaborative tools they will use, what are the expected standards of work, when are the milestones, when are the internal deadlines, and how will preliminary assignment of individual tasks be determined). Students' first step should be the development of an online group calendar that can block off individual commitments and highlight dates and times that are free for all group members so that coordination of meetings is seamless. The worst thing a student can do is surprise their group with a long-standing commitment at the last minute. This is what typically starts group work off on the wrong foot.

To assist teams in coming to terms with group members who may not be performing up to standards, students are encouraged to complete an interim draft version of the peer evaluation form (located in each Avenue to Learn course shell) and use it to guide discussion within their team. This is for the students' own development and does NOT need to be submitted to the instructor. Everyone on the team deserves feedback and it is important that you provide it early (around the 50% of work done mark) and definitely prior to the completion of the second residency.

If you feel there has been a discrepancy in the contributions of your group members, peer reviews should be submitted on Avenue within 48 hours after the deadline of each group assignment.

If problems persist during the term, it is imperative that they are raised and underlined documented to the instructor and TA as early as possible. A certain level of group disharmony is typically present in every group project. Students' ability to manage through the conflict and leverage the talents of everyone is an important skill. It will serve them well in their workplace, where collaborative work is ever present, as well as in the MBA program.

Instructors will arrange and administer formal peer review processes to adjust students' marks to reflect their contributions to team deliverables. Instructors will explain the details of how they will manage peer review adjustments for a class early in the semester. The instructor's mark adjustment may reduce the final mark on a group assignment for a student by up to 25%. In other words, if a group receives a grade of 85% for an assignment, an instructor may choose to adjust that final grade down to as far as 60% if the peer review adjustment form indicates that an individual did not complete his/her fair share. Please note, the downward adjustment of up to 25% is the maximum adjustment that can be assigned. An instructor may choose NOT to apply an adjustment and may choose to assign a penalty that is only a fraction of what his/her peers recommended.

Communication and Feedback

Students that are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential email to the Program Director. 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. Marks for all evaluation activities will be posted on Avenue. Your final grade will come through Mosaic and will not be posted on Avenue.

Students should be aware that when they access the electronic components of this course, 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 this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

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. **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,* 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 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.

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 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.

Student Accessibility Services

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

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 <u>or</u> 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 instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during the 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.

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 Avenue, in the classroom, etc.) to the various learning activities will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during classes and/or on Avenue. 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.

Petition for Relief from Missed Academic Work

Where students miss a scheduled deliverable, assessment or class participation for legitimate reasons (e.g., religious holiday, medical issue) as determined by the Program Office, the weight for that component will be distributed at the discretion of the instructor. Proper documentation explaining such an absence must be provided to the Program Office within five (5) working days after the deadline. Please see the BLPT Academic Policy Handbook for more details. All deadlines **MUST** be adhered to in this course. Any material that is submitted after the deadline and has not been approved through the Missed Academic Work policy in the BLPT Handbook will **NOT** be evaluated and will receive a mark of **ZERO**.

Important Course Dates

August 15th	Course Opens
September 6th	Webinar #1 – Probability in Practice
September 17th	**Residency #1; Class – Confidence and Hypotheses**
September 18th	**Residency #1; Class – T-Tests and Excel**
October 4th	Webinar #2 – Regression and Model Building
October 7th	Group Statistics Case Due
October 15th	**Residency #2; Review Class + Statistics Test**
October 16th	**Residency #2: Class – Economics of the Firm**
November 1st	Webinar #3 – Theories of Consumer Choice
November 19th	**Residency #3; Class – Competitive Markets**
November 20th	**Residency #3; Class – Uncompetitive Markets**
November 25th	Economics Group Project Due
November 29th	Webinar #4 – Macroeconomics and Current Events
November 30th	Economics Take Home Exam due

COURSE SCHEDULE

Resources are best consumed in the order presented.

All chapters for the first half (up to day 2 of residency 2) are Sharpe & De Veaux 4th Can. Ed. Chapters in the second half (starting day 2 of res 2) are Perloff & Brander 3rd ed.

The supporting readings offer more detail than the videos as well as detailed examples you may find useful, depending on your professional needs.

BLOCK	DATES	VIDEOS, READINGS, ASSIGNMENTS, AND MEETINGS
Online 1	Aug 15–Sept 16	**Videos and supporting readings (before/after Webinar):** (before) Data Representation – Chaps 4, 5 (before) Probability – Chap 8 (after) Sampling Distributions and Confidence Intervals – Chaps 9, 10, 12 **Webinar #1 (Tues, Sept 6th, 7:00-8:00pm))** Discrete Probability Distributions **Case Reading:** New vs Old (posted on A2L) **Assignments:** Homework #1 due Friday September 9th, 11:59pm ET Homework #2 due Friday September 16th, 11:59pm ET
Residency 1	Sept 17–18	**supporting readings for Residency 1:** Chaps 13, 14 (stats) **Saturday:** Hypothesis Testing Framework and Theory. **Sunday:** Hypothesis Testing in Practice (T-Tests) – bring your laptop. Introduction to your statistics case.

Online 2	Sept 19–Oct 14	**Videos and supporting readings (before/after Webinar):** (before) Correlation & Introduction to Regression – Chaps 6, 7 (before) Modelling with Regression series – Chaps 18,19 (after) Multiple Regression – Chaps 20, 21 (after) Time Series - Chaps 22 **Webinar #2 (Tues, Oct 4th, 7:00-8:00pm)** Regression Modelling in Excel **Group Statistics Case (New vs. Old)** Due Friday, Oct 7th, 11:59pm ET **Assignments:** Homework #3 due Friday September 23rd, 11:59pm ET Homework #4 due Friday September 30th, 11:59pm ET Homework #5 due Friday October 7th, 11:59pm ET
Residency 2	Oct 15–16	**supporting readings for Residency 2:** Chap 1 (econ) **Saturday:** Statistics Review and Case Discussion **ONLINE STATISTICS TEST VIA A2L** **Sunday:** Introduction to Managerial Economics
Online 3	Oct 17–Nov 18	**Videos and supporting readings (before/after Webinar):** (before) Supply & Demand Basics – Chaps 2, 3.1 (before) Production Economics – Chaps 5, 6 (before) Theories of Consumer Choice – Chap 4 (after) Competitive Markets – Chaps 8, 11.4 **Webinar #3 (Tues., Nov 2nd, 7:00–8:00pm)** Optimization vs. Human Behaviour **Assignments:** Homework #6 due Friday October 21st, 11:59pm ET Homework #7 due Friday October 28th, 11:59pm ET Homework #8 due Friday November 4th, 11:59pm ET Homework #9 due Friday November 11th, 11:59pm ET

Residency 3	Nov 19–20	**supporting readings for Residency 3:** Chaps 9, 11.1-3 **Saturday:** Uncompetitive Markets **Sunday:** Macroeconomics and Business Cycles
Online 4	Nov 21–30	**Videos and supporting readings (before/after Webinar):** (before) Macroeconomics - Economic Growth **Webinar #4 (Tues., Nov 29th, 7:00–8:00pm)** Macroeconomics and Current Events **Assignments:** Homework #10 due Friday November 25th, 11:59pm ET **Economics Group Project** • Due Sunday November 27th, 11:59pm ET **Economics Take Home Exam** • Due Wednesday November 30th, 11:59pm ET