Commerce 4MI3
MARKETING ANALYTICS
Fall 2021 Course Outline

Marketing Area
DeGroote School of Business
McMaster University

August 30, 2021

COURSE OBJECTIVE

The objective of the course is to illustrate how to execute a systematic and analytical approach to marketing decision-making that benefits both the seller and buyer. This course will familiarize students with the tools and techniques used to convert raw data into valuable insights that improve the customer experience and company equity.

This course will utilize a hands-on, practical approach, that will *require active participation throughout each class session*. The course will begin analyzing marketing data in **Excel** wherein students will become familiar with its practical value and limitations. More advanced topics will utilize a free application called **Python**. At the end of the course students will be highly proficient in Excel and comfortable with Python.

The course will emphasize both inference and prediction and highlight the trade-offs associated with different marketing analytics methods. Both classic and modern data analysis techniques, including machine learning, will be discussed. This course builds upon material covered in Commerce 2MA3 – Introduction to Marketing and is intended to complement Commerce 3MA3 – Marketing Research.

INSTRUCTOR AND CONTACT INFORMATION

Section 1: Tuesday, 11:30 - 2:20

Dr. W. Allender
Instructor
Office Hours: Check A2L for Details
Email: allendw@mcmaster.ca

Student TA
Harsh Soman
Office Hours: By Appointment
Email: somanh@mcmaster.ca

Course Website: http://avenue.mcmaster.ca (Avenue to Learn – A2L)

COURSE ELEMENTS

Credit Value:	3	Leadership:	No	IT skills:	Yes	Global view:	No
A2L:	Yes	Ethics:	No	Numeracy:	Yes	Written skills:	Yes
Participation:	Yes	Innovation:	Yes	Group work:	Yes	Oral skills:	Yes
Evidence-based:	Yes	Experiential:	Yes	Final Exam:	No	Guest speaker(s):	No

COURSE DESCRIPTION

Marketing departments are increasingly utilizing data routinely collected by their organizations to improve marketing decision making and more effectively allocate resources. This course will familiarize students with the tools used to convert raw data into valuable marketing insights. The course offers a hands-on, practical approach, giving students the opportunity to become familiar with data analysis techniques. The course will emphasize both inference and prediction and highlight the trade-offs associated with different marketing analytics methods.

LEARNING OUTCOMES

Upon succeeding in this course, students will:

- Understand to main concepts of classic and modern marketing analytics.
- Improve their problem analysis and decision-making skills.
- Be able to manipulate and prepare data for analysis.
- Visually and statistically summarize data.
- Know how to make predictions and present results.
- Execute and interpret multiple regression analysis with application to sales forecasting.
- Understand how choice model analysis can inform customer preferences.
- Execute a segmentation and/or classification analysis.
- Know how to apply and evaluate machine learning techniques.

COURSE MATERIALS AND READINGS

Required:

Data & Course Materials will be Available on Avenue to Learn (A2L)

- http://avenue.mcmaster.ca

Required Software:

- Excel and Python (Jupyter)

Marketing Analytics: Data-Driven Techniques with Microsoft Excel, 2014.
Wayne L. Winston. Wiley Publishing.

EVALUATION

Learning in this course results from understanding textbook content and application of concepts to in-class case analysis/presentation, hand-in reports, simulation participation, and tests. The balance of the learning results from lectures on strategic concepts. Work will be evaluated on an individual basis as well as in groups, in which case group members will share the same grade adjusted by peer evaluation and instructor and/or TA observation.

Missed tests/exams will receive a grade of zero unless the student has submitted and been approved for a Notification of Absence or MSAF. If an assignment can be submitted late, it will be penalized at least 10% each day after the deadline. Your final grade will be calculated as follows:

Components and Weights

Data Analysis Assignments	(Individual/Group)	30%
Multiple Choice/Short Answer Quiz	(Individual)	15%
Class Participation	(Individual)	10%
Final Written Case Assignment	(Group)	45%
Total		**100%**

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

Course Deliverables

Data Analysis Assignments (30%)

Students will be solving numerous practical problems throughout the term and have an assignment related to them. The Instructor will distribute detailed instructors that discuss the problem and the data related to each assignment. Students should turn in the data, numerical results used to analyze the problem and a discussion. Students that miss the assignment deadline can use an MSAF to avoid losing marks but will be responsible for getting the missed course information from a peer. If an MSAF is used the grade will be calculated based on the other assignments submitted. The written responses should be submitted in the form of a Word or PDF document to the correct Dropbox on Avenue.

Multiple Choice Quizzes (15%)

There will be several quizzes given throughout the semester, of which, I will drop the lowest scoring quiz when calculating the 15%. Together, the highest scoring exams will comprise 15% of your final grade. Not all quizzes will be known ahead of time, so please prepare for each class. There will be *NO late exams or make-up exams*. However, *you may take an exam early* if you are unable to attend the scheduled exam date. Quizzes will cover the required reading (see weekly outline below) and material discussed in class. They are not comprehensive.

Class Participation (10%)

Each student is encouraged and expected to contribute regularly to lecture, class discussion, etc. as called upon by the instructor or the TA, as well as on a voluntary basis. Students are expected to download the data from Avenue prior to class and follow along with the in-class demonstrations. This not only gives students hands-on experience, but by replicating the results it ensures they understand precisely *how to do the analysis*. A portion of the participation grade will be dedicated to periodically submitting your progress (i.e. screen grabs, uploading the excel file progress, etc.) throughout class demonstrations. The remaining part of the grade will be based on periodic in-class quizzes and/or class participation questions. Students will also be able to improve their participation grade Participation will be graded by examining the quality of contributions to each class. Instructors and TA(s) are free to cold call on anyone at any time. Hence, it is imperative that you prepare for every class. To a substantial extent, the benefit you derive from the course is related to your willingness to respectfully expose your viewpoint to the critical judgement of the class, and to your active participation in building upon the ideas of others.

Students that cannot attend a live class session will lose the in-class participation points but will be able to view the recorded/edited class and complete the assignments. Due dates will be adjusted so students have time to complete the assignment after the video is posted online.

If classes are in-person: Name cards will be used to help give participation credit. You must have a name card with your **full first and last name** clearly written and displayed in front of you for every class. Participation points may not be awarded if you do not have your name card out.

Final Written Case Assignment (45%)

Each group of 5 – 6 will read, analyze, and write up a case analysis. The case along with a more detailed description of the assignment will be distributed around week 10. Please keep in mind that each group will only receive credit for analysis in the submitted Excel file. Some general notes to keep in mind:

- The Final Written Case Analysis should be submitted by a single group member to Avenue. A hard copy is not required. The write-up should be submitted in PDF format. This means that all reports should be *typed* and *edited carefully*.
- The Case Analysis should be typed using 12 point Times New Roman font. 1 inch margins should surround any text or images in the body of the report and page numbers should be utilized. Additional instructions provided on A2L. Double spaced and 10 – 13 pages in length.
- Group member evaluation forms are required and due the same day by 11:59pm. These will represent ~3% of the assignment grade. Regardless of how the evaluation is filled out (individually or as a group) it must be submitted to Avenue by each student. Evaluations that are submitted after the due date will be taken into consideration but will not earn any marks.

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/

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*, 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.

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. All students must receive feedback regarding their progress prior to the final date by which a student may cancel the course without failure by default.

- *For Level 1 and Level 2 courses, this feedback must equal a minimum of 20% of the final grade.*
- *For Level 3 courses and above, this feedback must equal a minimum of 10% of the final grade.*

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

AUTHENTICITY/PLAGIARISM DETECTION

In this course we will be using 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.

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ONLINE COURSE COMPONENTS

In this course we will be using several on-line elements including e-mail, Avenue to Learn, webpages, 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, usernames 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 disclosures, please discuss them with the course instructor.

ONLINE PROCTORING

This course 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.

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 may be financially responsible for copyright material that is redistributed without written consent. 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

There may be changes to the dates and deadlines for any or all courses in exceptional circumstances (e.g., severe weather, labour disruptions, etc.). The instructor reserves the right to modify elements of the course during the term. If either type of modification becomes necessary, reasonable notice and communication with the students will be given.

RESEARCH USING HUMAN SUBJECTS

All researchers conducting research that involves human participants, their records or their biological material are required to receive approval from one of McMaster's Research Ethics Boards before (a) they can recruit participants and (b) collect or access their data. Failure to comply with relevant policies is a research misconduct matter. Contact these boards for further information about your requirements and the application process.

McMaster Research Ethics Board (General board): https://reo.mcmaster.ca/

Hamilton Integrated Research Ethics Board (Medical board): http://www.hireb.ca/

ACKNOWLEDGEMENT OF COURSE POLICIES

Your enrolment in Commerce 4MC3 will be considered an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

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

COURSE SCHEDULE

Commerce 4MI3
Marketing Analytics
Fall 2021 Course Schedule[1]

(*Tentative & Subject to Change*)

WEEK	DATE	LECTURES AND ASSIGNMENTS
1	Sept. 7	**Live via Zoom** (link will be posted to Avenue) • Discussion: Introduction and Course Overview • Excel Demonstration: Slicing and Dicing Marketing Data with PivotTables • Discussion: Brief Math Review
2	Sept. 14	**Live via Zoom** • Lecture: Brief Statistics Review • Lecture: Data Mining • Excel Demonstration: Using Excel Charts & Functions to Summarize Marketing Data
3	Sept. 21	**Live via Zoom** • Excel Demonstration: Using Excel's Solver to Optimally Price Products • Installing Python.
4	Sept. 28	**Live via Zoom** • Excel Demonstration: Multiple Regression and the Marketing Mix • Python Demonstration: A Gentle Intro. to Python ○ Code: *Gentle Intro to Python*.ipynb

[1] Please download the relevant class lecture(s), code, and/or demonstration data from Avenue prior to class starting.

5	Oct. 5	**Live via Zoom** • Excel Demonstration: Logistic Regression and Discrete Choice Analysis • Python Demonstration: A Gentle Intro. to Python ○ Code: *Gentle Intro to Python*.ipynb **Additional Reading** • *Logistic Regression*.ipynb • *Multinomial Logit Simulation and Estimation*.ipynb
	Oct. 12	**No Class – Mid-term Recess**

6	Oct. 19	**Live via Zoom**
		• Python Demonstration: Using Discrete Choice Analysis to Understand Customer Needs
		  ➢ Code: *Logistic Regression*.ipynb
		  ➢ Code: *Multinomial Logit Simulation and Estimation*.ipynb
		
		Additional Reading
		• *An Introduction to Machine Learning*.ipynb

7	Oct. 26	**Live via Zoom** • Python Demonstration: Machine Learning and Forecasting ➢ Code: *An Introduction to Machine Learning*.ipynb **Additional Reading** • *Time Series Analysis & Neural Networks*.ipynb
8	Nov. 2	**Live via Zoom** • Python Demonstration: Machine Learning and Forecasting ➢ Code: *Time Series Analysis & Neural Networks*.ipynb
9	Nov. 9	**Live via Zoom** • Python Demonstration: Classification and Segmentation
10	Nov. 16	**Live via Zoom** • Python Demonstration: Classification and Segmentation **Additional Reading** • *Sentiment Analysis*.ipynb
11	Nov. 23	**Live via Zoom** • Python Demonstration: Text Mining & Sentiment Analysis ➢ Code: *Sentiment Analysis*.ipynb

12	Nov. 30	Final Case Analysis Preparation
13	Dec. 7	Final Case Analysis Preparation