

MSMG 6010

Quantitative Methods for Business and Management Research Fall 2023

Course Information

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Office Hours & Location: Before classes
in person or online by appointment

Course Time & Days: Wednesdays or
Thursdays 18:00-21:00

Class Location:

LMP D101

IBM Learning Space

3600 Steeles Ave East

Markham ON L3R 9Z7

Course eClass site:

Land Acknowledgment

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region ([LA&PS Land Acknowledgement](#)).

Course Overview

Course Description

This course prepares our students with the core knowledge and skills for designing quantitative, academic, and applied, research in business and management, including understanding of data analysis and applications of statistical concepts and methods.

Course Learning Objectives

By the end of this course, students will be able to:

- understand key concepts and principles of research design in business and management.

- identify researchable problems and ethical implications of conducting quantitative research.
- chose and apply the appropriate statistical methods from a battery of statistical techniques to manage research projects.
- use statistical software to calculate statistics data and interpret and present results.

Course Format and Organization

This course is delivered as an in-person lecture (LECT/SEMR) at the IBM Learning Space located at 3600 Steeles Ave East Markham ON L3R 9Z7. During class material will be reviewed and discussed. *eClass* will be used to distribute course materials and submit written exercises/assignments for grading. *Zoom* platform may be used to conduct office hours and to hold classes remotely in the event of unavoidable circumstances. Opportunities to engage course content at other times and through other modes of delivery will be limited.

Technical Requirements

In the event of holding a class remotely students will require a stable, high-speed Internet connection, a computer with a webcam and microphone, and/or a smart device with these features.

Students and the instructor can interact through the platforms *eClass* and *Zoom* provided by York University.

Using Zoom

Students shall note the following:

- Zoom is hosted on servers in the United States and Canada. Recordings done since May 4, 2022 are stored in Canada. For more information, please refer to the notes on [Zoom Privacy and Security](#) provided by Information Security at York.
- If you have privacy concerns about your data, provide only your first name or a nickname when you join a session.
- The system is configured in a way that all participants are automatically notified when a session is being recorded. In other words, a session cannot be recorded without you knowing about it.

Here are some useful links for student computing information, resources, and help:

- [Student Guide to eClass](#)
- [Zoom@YorkU Best Practices](#)
- [Zoom@YorkU User Reference Guide](#)
- [Student Guide to eLearning at York University](#)

To determine Internet connection and speed, there are online tests, such as [Speedtest](#), that can be run. If you need technical assistance, please consult the [University Information Technology \(UIT\) Student Services](#) web page. For more specific assistance, please write to askit@yorku.ca.

Course Communication Plan and Office Hours

- Course communications (e.g., course announcements, deadlines, assignment submissions) will be done through *eClass*.
- Students can communicate with one another in general and within their team in discussion forums on *eClass* (preferred) or directly via e-mail.
- Students can ask questions about the course and course materials in a dedicated Q&A forum on *eClass*. This will benefit other students who may have the same question.
- Office hours can be used to consult about your research project paper.

Course Recommendations

- It is strongly suggested that students review the material (textbook and readings) before each class.
- The course is based on two textbooks. Bougie and Sekaran is focused on the managerial/marketing side while Montgomery is more technical. Both textbooks complement each other.
- Full technical mastery is not expected, but a conceptual understanding is needed to better design and carry on research projects.
- Technical content will be delivered along the course as it takes time to understand and apply mathematical concepts. In order to start delivering the technical content earlier, the flow of concepts for Week 8 does not follow the logical flow. When attending a class make sure that you understand the content from previous classes.

Course Evaluation

Assessment	Due Date	Weight %	Course Learning Outcome
Class Participation	Not Applicable	10%	
Research Proposal	Week 8	10%	
Project Research	Week 11	40%	
Final Exam	Week 12	40%	The final exam test must be passed with a minimum of a C (60)
		100%	

Assessment Descriptions

The final project research follows the structure of a published paper. Content and sections covered in most papers follow the structure indicated below:

- Abstract
- Introduction
- Research question and objective
- Theoretical Framework
- Methodology
- Results
- Discussion
- Theoretical and Managerial Implications
- Limitations and Current Research
- Conclusion
- References

Examples of previous research papers submitted in partial fulfillment of the requirements for the Master of Science in Management Practice can be found at <https://hdl.handle.net/10315/40817>. The examples listed are final MRP papers which are expected to be more thorough than the ones presented for this course, but provide an orientation on the structure and content.

Submitting Assignments

The research proposal and project paper for this course must be received within the timeframe specified for the assignment and are to be handed in via e-class. The project research submission has to include the paper, presentation/deck to be used in class to present and SPSS output.

Late Work Policy

Speak to you or your instructor early in the term if you need to adjust assignment deadlines. A 5% lateness penalty per calendar day will be applied to late submissions without notice.

Missed Tests and Exams

Reasons other than duly authenticated illness and bereavement are normally not admissible justifications for failure to appear for an examination or meet deadlines. You must advise the instructor in advance if unable to appear for an examination or meet an exercise/assignment deadline.

Deferred standing may be granted to students who are unable to write their final examination at the scheduled time, or to submit their outstanding course work on the last day of classes.

Attending Physician Statements are not required as supporting documentation for students requesting deferred standing, petitions and appeals this fall. [Senate](#) approved extending the waiver of required Attending Physician Statements to December 31, 2023.

Grading

The grading scheme for this course conforms to the 9-point system used in undergraduate programs at York University. For a full description of the York grading system, visit the York University [Academic Calendar](#).

GRADE	GRADE POINT	PERCENT RANGE	DESCRIPTION
A+	9	90-100	Exceptional
A	8	80-89	Excellent
B+	7	75-79	Very Good
B	6	70-74	Good
C+	5	65-69	Competent
C	4	60-64	Fairly Competent

D+	3	55-59	Passing
D	2	50-54	Marginally Passing
E	1	(marginally below 50%)	Marginally Failing
F	0	(below 50%)	Failing

How to Use Citations

Following the common practice when publishing papers, work done by other people must be appropriately recognized using citations linking information back to an identifiable source. Most published work indicate how to cite it, in the case of online resources where a citation reference is not provided the internet link must be provided. Acceptable citation formats can be found at:

- [SPARK Student Papers & Academic Research Kit](#)
- [Drop-in Research Support](#), YorkU Libraries
- [Writing Centre](#)
- [ESL Open Learning Centre](#)

Course Schedule: Weekly Readings and Activities

Required Course Materials

Sekaran, Uma, Roger Bougie. Research Methods For Business: A Skill Building Approach, 8th Edition. Wiley. ISBN: 978-1-119-56122-4 (PBK), ISBN: 978-1-119-60925-4 (EVAL)

Montgomery, Douglas C. Design and analysis of experiments, 10th edition. Hoboken, NJ : Wiley, 2020. ISBN 9781119492474 (ePDF), ISBN 9781119492443 (ePub), ISBN 9781119492498 (pbk.)

Optional Materials

Additional sources are listed in the 'Readings and Activities' sections of the course schedule.

Course Schedule

Week/Module Dates	Readings and Activities	Assessment Due Dates
Week 1 Sept 6/7	Introduction to Research Defining Management Problem Defining Research Problem Strategy of Experimentation Design of Experiments – The Basics Using Statistical Techniques in Experimentation	Bougie and Sekaran, Ch. 1 Bougie and Sekaran, Ch. 3 Bougie and Sekaran, Ch. 4 Montgomery, Ch. 1.1 Montgomery, Ch. 1.3 Montgomery, Ch. 1.6
Week 2 Sept 13/14	The scientific approach and alternative approaches to investigation Basic Statistical Concepts Sampling Distributions	Bougie and Sekaran, Ch. 2 Montgomery 2.2 Montgomery 2.3 Open Source: The Positivism Paradigm of Research Park, Yoon Soo PhD ; Konge, Lars MD, PhD ; Artino, Anthony R. Jr PhD
Week 3 Sept 20/21	Elements of Research Design Guidelines for Designing Experiments Sampling	Bougie and Sekaran, Ch. 7 Montgomery 1.4 Bougie and Sekaran, Ch. 14
Week 4 Sept 27/28	AQQQQAQAQ	Bougie and Sekaran, Ch. 11 Bougie and Sekaran, Ch. 15, INTRODUCTION, GETTING THE DATA READY FOR ANALYSIS, GETTING A FEEL FOR THE DATA (MEASURES OF CENTRAL TENDENCY AND DISPERSION) Bougie and Sekaran, Ch. 16. Up to TESTING HYPOTHESES ABOUT SEVERAL MEANS (excluded) Montgomery 2.4 Montgomery 2.5

<p>Week 5 Oct 4/5</p>	<p>Basic Statistical Concepts, Chi Square and F distribution Analysis of Variance – One Way Analysis of Variance - Two Way Quantitative Data Analysis</p> <p>Quantitative Data Analysis: Hypothesis Testing (partial) Inferences about the Variances of Normal Distributions Experiments with Single Factor – Analysis of Variance</p>	<p>Montgomery 2.2, ...Other Sampling Distributions Montgomery 3.2, 3.3 Montgomery 5.3 Bougie and Sekaran, Ch. 15, GETTING A FEEL FOR THE DATA (RELATIONSHIPS BETWEEN VARIABLES) Bougie and Sekaran, Ch. 16. TESTING HYPOTHESES ABOUT SEVERAL MEANS, OTHER MULTIVARIATE TESTS AND ANALYSES (part)</p> <p>Montgomery 2.6 Montgomery 3.1 – 3.4</p>
<p>Reading week Oct 11/12</p>		
<p>Week 6 Oct 18/19</p>	<p>Quantitative Data Analysis: Hypothesis Testing (partial) Casual Research Questions Regression Model Sample size (revisited)</p>	<p>Bougie and Sekaran, Ch. 16. Regression Analysis Bougie and Sekaran, Ch. 4, Casual Research Questions Montgomery 3.5, 10.1 – 10.3 Montgomery 3.7</p>

<p>Week 7 Oct 25/26</p>	<p>Other Multivariate Tests and Analyses Logistic Regression Conjoint Analysis Manova</p>	<p>Bougie and Sekaran, Ch. 16. OTHER MULTIVARIATE TESTS AND ANALYSES Montgomery 15.1.2 The Generalized Linear Model Conjoint Analysis NEW WAY TO MEASURE CONSUMERS' JUDGMENTS Green, Paul E ; Wind, Yoram</p> <p>Wolfgang Karl Härdle , Léopold Sima, Applied Multivariate Statistical Analysis Third Edition, 17.1-3 Estimation of Preference Orderings</p> <p>Manova (light introduction, to go deeper) Applied MANOVA and Discriminant Analysis, Second Edition, by Carl J. Huberty and Stephen Olejnik Copyright © 2006 JohnWiley & Sons, Inc.</p>
<p>Week 8 Nov 1/2</p>	<p>Data Collection Methods: Observation Administering Questionnaires Measurement of Variables: Scaling, Reliability, Validity</p>	<p>Bougie and Sekaran, Ch. 9. Bougie and Sekaran, Ch. 10. Bougie and Sekaran, Ch. 13.</p>
<p>Week 9 Nov 8/9</p>	<p>Hands-on-Practice</p>	
<p>Week 10 Nov 15/16</p>	<p>Drawing Conclusions The Research Report</p>	<p>Bougie and Sekaran, Ch. 18 Bougie and Sekaran, Ch. 19</p>
<p>Week 11 Nov 22/23</p>	<p>Final Test</p>	
<p>Week 12 Nov 29/30</p>	<p>Presentations</p>	

Course Policies

All students are expected to familiarize themselves with the following information:

- [Student Rights & Responsibilities](#)
- [Academic Accommodation for Students with Disabilities](#)

Please also review the following course policies:

Academic Integrity

As a student at York University, you have a responsibility to both understand and uphold the integrity of the academic experience. The Faculty of Liberal Arts & Professional Studies supports the International Center for Academic Integrity's [definition of academic integrity](#). That is, you will be committed to acting in all academic matters, even in the face of adversity, with honesty, trust, fairness, courage, respect and responsibility. Here is how you can demonstrate academic integrity in the completion of this course:

- **Respect the ideas of others:** Your course work should represent your own knowledge and ideas. [You should not falsely claim credit for ideas that are not your own, by presenting another's work as yours](#). If you are quoting, paraphrasing, or summarizing another person's work in order to support your own ideas, identify the work and the author through proper citation practices. For more information about how to cite properly, use the [Student Papers and Academic Research Kit](#) (SPARK). You can improve your writing, research, and personal learning abilities through the [Learning Commons](#), or by visiting the [Writing Centre](#) or [ESL Open Learning Centre](#).
- **Respect your peers:** [Know when you are allowed to collaborate](#). Ask your instructor about what group work entails when it comes to the [sharing of work](#). In test situations and assignments, don't steal or give answers to your peers, whether in-person or online (e.g., in group chats and/or on [third-party content-sharing websites](#), such as Chegg, Course Hero, etc.). Both cheating and aiding in a breach of academic honesty are violations of York University's academic honesty policy.
- **Respect your course instructor(s):** Understand what your instructors are asking of you in class, as well as on assignments, tests and/or exams. If you are unsure, ask your professor or teaching assistant. They are committed to making you feel supported and want to assess you fairly and with integrity. Please do not submit the same piece of work for more than one course without your instructor's permission. That can be considered an act of cheating.
- **Respect yourself:** When you act with integrity, you know that your work is yours and yours alone. You do not allow others to take tests for you. [You do not buy or otherwise obtain term papers or assignments](#). You do the work. As a result, you

know that you *earned* the grades that you receive, so you can be proud of your York degree. By acting with integrity in your course work, you are also practising a valuable professional skill that is important in all workplaces.

- **Take responsibility:** If you have acted in an academically dishonest way, you can demonstrate courage and take responsibility for your mistake. You can admit your mistake to your course instructor as soon as possible.

Students who engage in academic dishonesty can be subject to disciplinary action under the [Senate Policy on Academic Honesty](#). Your lack of familiarity with the Senate Policy does not constitute a defense against its application. Some academic offences can also constitute offences under the [Criminal Code of Canada](#), which means that you may also be subject to criminal charges.

Students are not permitted to use generative artificial intelligence (AI) in this course. Submitting any work created through the use of generative AI tools will be considered a violation of York University's [Senate Policy on Academic Honesty](#). If you do not know whether an online resource or tool can be used in this course, please contact the instructor for guidance. For more information, please review [AI Technology & Academic Integrity: Information for Students](#).

Accessibility

While all individuals are expected to satisfy the requirements of their program of study and to aspire to achieve excellence, the University recognizes that persons with disabilities may require reasonable accommodation to enable them to perform at their best. The University encourages students with disabilities to register with [Student Accessibility Services](#) to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors through their Letter of Accommodation (LOA).

Please let your instructor know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course. Sufficient notice is needed so that reasonable steps for accommodation can be discussed. Accommodations for tests/exams normally require three (3) weeks (or 21 days) before the scheduled test/exam to arrange.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making reasonable and appropriate [accommodations to adherents for observances of special significance](#). Should any of the dates specified in this syllabus for course examinations, tests, or deadlines conflict with a date of

religious significance, please contact the instructor within the first three (3) weeks of class. If the date falls within the formal examination periods, you must complete and submit a [Religious Accommodation for Examination Form](#) at least three (3) weeks before the start of the exam period.

Intellectual Property

Course materials are designed for use as part of this particular course at York University and are the intellectual property of the instructor unless otherwise stated. Third-party copyrighted materials (such as book chapters, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian copyright law. Students may not publish, post on an Internet site, sell, or otherwise distribute any course materials or work without the instructor's express permission. Course materials should only be used by students enrolled in this course.

Copying this material for distribution (e.g., uploading material to a commercial third-party website) may lead to a charge of misconduct according to York's [Code of Student Rights and Responsibilities](#), the [Senate Policy on Academic Honesty](#), and/or legal consequences for copyright violations.

Student Conduct in the Learning Environment

York University is committed to fostering teaching and learning environments that are free of disruptive and/or harassing behaviour, are physically safe, and conducive to effective teaching and learning. Students and instructors are expected to maintain a professional relationship characterized by courtesy, civility, and mutual respect and to refrain from actions disruptive to such a relationship. Individuals who fail to adhere to such standards and who violate University or public law may be subject to disciplinary action by the University.

For more information, see the policies on [Disruptive and/or Harassing Behaviour in Academic Situations](#) and [Student Conduct and Responsibilities](#), as well as the [Code of Student Rights & Responsibilities](#).

Netiquette for eClass and Online Learning

Students and instructors have a joint responsibility to create and maintain a welcoming and inclusive learning environment. All students are expected to conduct themselves in accordance with the [Code of Student Rights and Responsibilities](#). Please review and familiarize yourself with behaviours that support "netiquette" in virtual classrooms by consulting the [Student Guide to eLearning](#).

Student Notice of Recording for Online Teaching and Learning

Activities for this course involve recording, in partial fulfillment of the course learning outcomes. Images, audio, text/chat messaging that have been recorded may be used and/or made available by the University to students enrolled in the course and those supporting the course for the purpose of materials review, for assessment, etc. Recordings will be managed according to the University's Common Record Schedule and will be securely destroyed when no longer needed by the University. Your personal information is protected in accordance with York University's [Guidelines on Access to Student Records and Protection of Privacy](#) and the [Freedom of Information and Protection of Privacy Act](#). Access to online materials, including recordings or live meetings, is subject to York University's [Senate Policy on Computing and Information Technology Facilities](#).

The University will use reasonable means to protect the security and confidentiality of the recorded information, but cannot provide a guarantee of such due to factors beyond the University's control, such as recordings being forwarded, copied, intercepted, circulated, disclosed, or stored without the University's knowledge or permission, or the introduction of malware into computer system which could potentially damage or disrupt the computer, networks, and security settings. The University is not responsible for connectivity/technical difficulties or loss of data associated with your hardware, software, or Internet connection.

By engaging in course activities that involve recording, you are consenting to the use of your appearance, image, text/chat messaging, and voice and/or likeness in the manner and under the conditions specified herein. In the case of a live stream recording, if you choose not to have your image or audio recorded, you may disable the audio and video functionality. If you choose to participate using a pseudonym instead of your real name, you must disclose the pseudonym to your instructor in advance to facilitate class participation.

You are not permitted to disclose the link to/URL of an event or an event session recording or copies of recording to anyone, for any reason. Recordings are available only to authorized individuals who have been directly provided the above instructions/link for their use. Recordings for personal use, required to facilitate your learning and preparation of personal course/lecture notes, may not be shared with others without the permission of the instructor or event coordinator, and may not be published, posted, linked to, or otherwise made available online, including on social media feeds, even if those feeds are private.

Student Support and Resources

To help you succeed academically, York University offers a wide range of resources and services. Everything from writing workshops and peer mentorship to wellness support and career guidance is available to fulfill our LA&PS students' needs. Explore the links below to access these on-campus resources:

- [Academic Advising](#) is available to provide students support and guidance in making academic decisions and goals.
- [Student Accessibility Services](#) are available for support and accessibility accommodation when required.
- [Student Counselling, Health & Wellbeing](#) offers workshops, resources, and counselling to support your academic success.
- [Peer-Assisted Study Sessions \(PASS\) Program](#) provides student study sessions for students to collaborate and enhance their understanding of course content in certain courses.
- [Student Numeracy Assistance Centre at Keele \(SNACK\)](#) supports students in courses involving math, stats, and Excel.
- [The Writing Centre](#) provides multiple avenues of writing-based support including drop-in sessions, one-to-one appointments, a Multilingual Studio, and an Accessibility Specialist.
- [ESL Open Learning Centre \(OLC\)](#) supports students with building proficiency in reading, writing, and speaking English.
- [Learning Skills Services](#) provides tips for time management, effective study and learning habits, keeping up with coursework, and other learning-related supports.
- [Learning Commons](#) provides links to supports for time management, writing, study skills, preparing for exams, and other learning-related resources.
- [Roadmap to Student Success](#) provides students with timely and targeted resources to help them achieve academic, personal, and professional success.
- [Office of Student Community Relations \(OSCR\)](#) is responsible for administering the [Code of Student Rights & Responsibilities](#) and provides critical incident support.
- [goSAFE](#) is staffed by York students and can accompany York community members to and from any on-campus location, such as the Village Shuttle pick-up hub, parking lots, bus stops, or residences.

For a full list of academic, wellness, and campus resources visit [Student Support & Resources](#).