



DEPARTMENT OF MANAGEMENT SCIENCES
Fall 2020

MSCI 609 Quantitative Data Analysis for Management Sciences

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Tutorial:	TBA	
Required textbook:	Behavioral Sciences STAT, 2nd Edition, 2014, Gary Heiman	
Textbook cost:	CourseMate, 1 term (6 months) Instant Access for Heiman's Behavioral Sciences STAT 2, 2nd Edition, \$79.95	
Recommended resource:	Khan Academy, Statistics & Probability https://www.khanacademy.org/math/statistics-probability	
Marking scheme:	Homework (lowest mark dropped) Quiz (lowest mark dropped) Participation in group project marking Group project (2 per group)	20% 25% 5% 50%

Note: MSCI 609 does not use calculus. For example, if you know what a moment generating function is or you know how to maximize a log-likelihood function or you are currently using R or Stata as your statistical package, please contact me.

Course Description: This introductory course covers the basic topics in statistical data analysis including: descriptive statistics and probability concepts; discrete and continuous probability distributions; sampling methods and the central limit theorem; estimation and confidence intervals; inference and hypothesis testing; linear regression.

Additional Materials and Equipment:

- Power point lecture slides will be available on LEARN.
- Quizzes are open book in the sense that you may consult your textbook, course notes, and materials posted on the course LEARN site. Use of any other resource (including file-sharing services such as chegg.com, coursehero.com, stackexchange.com, ...) is prohibited. You may not communicate directly or indirectly with any person except the course instructor.

Note:

1. Assignments will sometimes require software. You can use:
 - SPSS, PSPP - free version of SPSS (<https://www.gnu.org/software/pspp/>)
 - MS Excel - install Analysis ToolPak and Solver (<https://support.microsoft.com/en-us/office/load-the-analysis-toolpak-in-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4>)
 - SAS – free university edition (https://www.sas.com/en_us/software/university-edition/download-software.html)
 - Stata I/C - \$94USD/yr (<https://www.stata.com/order/new/edu/gradplans/student-pricing/>)
 - R – free (<https://www.r-project.org/>)
2. Lectures follow the textbook closely.

Project deliverables		
Due date	Description	Marks allocated
28 Sep	Give the names and IDs of your group members. Provide a one paragraph description of your topic with references. You will describe the model that you propose to use, the dependent variable, the independent variables.	5%
09 Oct	Sample data that you have collected for your project. A thorough explanation of the data source, what the data represents, time series, cross section, descriptive statistics.	5%
23 Oct	Preliminary analysis of your data. Comparison of means across groups, comparison of proportions across groups using parametric and nonparametric tests.	5%
06 Nov	First draft of the project is due.	10%
02 Nov – 04 Dec	Class presentations (5/week).	5%
07 December	Final draft of the project is due.	30%

Wk	Dates	Book Ch.	Topic	HW Due	Quiz (material covered)
1	08-11 Sep	1 2	Introduction to Statistics & Research Creating & Using Frequency Distributions		
2	14-18 Sep	3 4	Summarizing Scores with Measures of Central Tendency Summarizing Scores with Measures of Variability		
3	21-25 Sep	6 7	Describing Data with z-Scores & the Normal Curve Using Probability to Make Decisions about Data	HW1 25 Sep	22 Sep (wk 1 & wk 2)
4	28 Sep-02 Oct	8 9	Hypothesis Testing using the One-Sample t-Test Hypothesis Testing using the Two-Sample t-Test		29 Sep (wk 3)
5	05-09 Oct	10	Describing relationships using Correlation & Regression	HW2 09 Oct	06 Oct (wk 4)
6	12-16 Oct		<i>Reading week</i>	-	-
7	19-23 Oct	13	Chi Square & Nonparametric Procedures	HW3 23 Oct	20 Oct (wk 5)
8	26-30 Oct	notes	Multiple regression		27 Oct (wk 7)
9	02-06 Nov	-	Project presentations	HW4 13 Nov	
10	09-13 Nov	-	Project presentations		
11	16-20 Nov	-	Project presentations		
12	23-27 Nov	-	Project presentations		
13	30 Nov-04 Dec	-	Project presentations		

LATE SUBMISSIONS, ACADEMIC INTEGRITY, GRIEVANCE, DISCIPLINE, APPEALS, STUDENTS WITH DISABILITIES, REMOTE TEACHING & LEARNING:

Late submissions: Late HW submissions are not accepted. The only exception is when a doctor's note is provided to the instructor.

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](#) for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](#). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check [the Office of Academic Integrity](#) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](#) (other than a petition) or [Policy 71, Student Discipline](#) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72, Student Appeals](#).

Note for students with disabilities: [AccessAbility Services](#), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with [AccessAbility Services](#) at the beginning of each academic term.

Remote Teaching and Learning: Student Notice of Recording Activities for this course involve recording, in partial fulfillment of the course learning outcomes. You will receive notification of recording via at least one of the following mechanisms: within the Learning Management System (LEARN), a message from your course instructor, course syllabus/website, or other means. Some technologies may also provide a recording indicator. Images, audio, text/chat messaging that have been recorded may be used and/or made available by the University to MSC1 609's Professor for the purpose of class review and assessment. Recordings will be managed according to the University records classification scheme, WatClass, and will be securely destroyed when no longer needed by the University. Your personal information is protected in accordance with the Freedom of Information and Protection of Privacy Act, as well as University policies and guidelines and may be subject to disclosure where required by law.

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 event, if you choose not to have your image or audio recorded, you may disable the audio and

video functionality (see: Student privacy during live events). Instructions to participate using a pseudonym instead of your real name are included where the feature exists; however, you must disclose the pseudonym to your instructor in advance in order to facilitate class participation.) If you choose not to be recorded, this notice serves as confirmation of your understanding that you should view the recording later and ask your questions at that time.

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, should not be shared with others without the permission of the instructor or event coordinator. Review the University's guidelines for faculty, staff and students entering relationships with external organizations offering access to course materials for more information on your obligations with respect to keeping copies of course materials. For more information about accessibility, connect with AccessAbility Services.