

Department of Economics
Queen's University
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ECON 250 – Introduction to Statistics

FALL TERM 2019

Instructor: Samuel Brien

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<u>Office hours</u> :	As posted on OnQ		

Place and Time

Wednesdays 10:00-11:20 and Fridays 8:30-9:50
Room is Botterell Hall B147

Course Overview

This course is an introduction to statistics with economics and business applications. We introduce statistical hypothesis testing and cover basic methods as far as linear regression analysis.

Statistics is a fascinating subject that provides us tools to analyse all kinds of interesting questions. Is the world really getting warmer? Are rich people happier? Can we forecast what will happen to the economy next year? Answers to questions like these rely on statistic tools that are common to many fields.

We have an excellent book to guide us, and we shall discuss the main ideas and work on some problems in our class meetings. It is best to set aside significant time each week to work on problems on your own. The textbook has more than 100 questions for each chapter, half of which (the odd-numbered ones) have answers at the back of the book.

Prerequisites: ECON 110 or [ECON 111 and ECON 112]

Corequisites: MATH 120 or MATH 121 or MATH 122 or [MATH 123 and MATH 124] or MATH 126

Resources

Textbook

The required textbook is *The Practice of Statistics for Business and Economics, Fourth Edition*, by Moore, McCabe, Alwan, Craig (W.H. Freeman, 2016). The Queen's University custom edition is available in the campus bookstore and only includes the chapters used in this course.

OnQ

You should check the course site regularly for new material and announcements. To receive OnQ news items through email or text message, setup email/SMS notifications.

Calculator

You will definitely need a calculator for this course. In the Faculty of Arts and Science the approved calculator is the Casio fx-991. **This is the only calculator allowed during exams.** This calculator has a "Statistics mode" that is very useful for calculating some of the values we need to calculate in this course.

Software

Microsoft Excel is the recommended software for the data analysis part of the assignments. It is available for free to Queen's students here <http://www.queensu.ca/its/software/available-software> .

- Windows Excel users: You need to activate the Analysis ToolPak.
- Mac Excel users: OS X users of Excel will need to download and install a similar package called StatPlus:mac LE

Meetings after Class, Office Hours and Tutorials

Each year we receive e-mail from students after the final exam asking what they can do to improve their grade. For example, some students pass the course but do not receive a high enough grade to be eligible to take Economics 351. The answer to these enquiries is that, unfortunately, there is nothing we can do. We cannot help you either in or after the final exam, or change the weighting scheme, or assign extra work for credit.

So, if you have difficulties in the course please consider seeing the instructor after class or in office hours to ask questions, please ask the teaching assistants to work through practice problems with you, and attend any tutorials offered. We are here to assist you *before* the final exam, but we cannot do so *afterwards*.

Evaluation and Course Policies

Your grade will be computed as follows:

Online Quizzes (9 out of 12)	9 %
Assignments (2)	16%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam	35%

Quizzes

- Quizzes consist of a few questions related to the material covered in class and the required readings.
- The best 9 out of 12 quizzes will count towards your final grade. The three “drops” are your insurance against any unpredictable event that may prevent you from completing a quiz.
- Each quiz can be attempted as many times as you want. The best attempt counts.
- Each week, your answers to the online quiz are to be submitted on OnQ before Wednesday 9AM, at which time the quiz is closed, and no extra extension is granted.

Assignments

- The assignments are to be completed in groups of maximum 3 students.
- For each assignment, assignment groups will be open on the OnQ platform and students are free to enroll in groups with some friends until an enrolment deadline after which students without groups will be expected to hand in the assignment by themselves. This process will be repeated for each assignment and students are encouraged to work different assignments with different colleagues.
- Assignments are to be submitted on OnQ.
- In all assignments, 10% of the grades are attributed to clarity of the presentation and respect of the guidelines given in the assignment handout.
- Late assignments receive a 10% penalty, plus 10% per complete day of delay. 0% is given for assignments submitted after the solutions were available (usually two days after submission deadline).

Midterm and Final Exam

- There will be two in-class midterm, on October 18th and November 15th. Please make sure you don't have any schedule conflict on those date.
- You are allowed **one handwritten one-sided letter size (8½ x 11 inches) cue sheet** containing any information you deem useful for the exam. Any other books, electronic organizers, cell phones, notes may not be used during exams.
- **The only calculator allowed is the Casio 991 series.**
- No make-up midterms will be given. If you miss a midterm for a legitimate reason, I will reallocate the corresponding weight to the final (i.e. your final would count for 55%).

Re-grading

If you believe a mistake was made in grading your work, please describe the issue in writing on the back of your copy (or by email), hand it to the TA and give them a few days to examine your request and come back to you (even if it's just an inquiry on something unclear or you want to point out an error in summing up the score).

If after the TA's response you are still not satisfied that your work was graded fairly, please bring the issue to my attention and I will make a final decision. Note that a regrading involves regrading the work in its whole and points may be deducted as well as added.

Any request for re-grading must be submitted within two weeks after the grades are available for this work.

If you wish to discuss with me your answers without asking for re-grading, I will always be happy to do that.

Numbers In, Letters Out

All assignments and exams in this course will receive numerical marks. Your final grade for the course will be derived by converting your numerical percentage course average to a letter grade according to Queen's Official Grade Conversion Scale, which can be found at

https://www.queensu.ca/artsci/sites/default/files/policy_on_grading.pdf

Class Etiquette and Academic Integrity

Class Etiquette

- Please arrive on time
- Please turn your cell phones, beepers and pagers off before entering the class.
- No pictures or video are to be made in class.
- Consider the class material as copyrighted.

Academic Integrity

Academic Integrity is constituted by the six core fundamental values of honesty, trust, fairness, respect, responsibility and courage (www.academicintegrity.org). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University.

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1), on the Arts and Science website, and from the instructor of this course.

(see <https://www.queensu.ca/artsci/students-at-queens/academic-integrity>)

Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Acknowledgments: Giving credit where due

Collaborative study work among students is not only allowed, but it is encouraged. When required to submit separate assignments, each student (or groups) must make sure to:

- Reformulate any idea that is the result of a discussion with another group so that what you submit reflects your group's own understanding;
- Acknowledge collaboration and any help received, with name of the party involved, at the end of your submitted work. Giving credit to others for their contribution is a good practice in the workplace and in the academic world. It sets a clear boundary between cheating and collaborating. No point is deducted for acknowledgement of help received (as long as you also contribute to your own work and formulate common ideas in your own words).

Tentative Schedule

	Readings	Concepts	Notes
Week 1 Sept. 6	Ch. 1.1	<ul style="list-style-type: none">• Course Plan• Basic vocabulary and outline	
Week 2 Sept. 11, 13	Ch. 1.2-1.4 Ch. 3	<ul style="list-style-type: none">• Describing a Distribution• Sources of data	
Week 3 Sept. 18, 20	Ch. 2.1-2.2 Ch. 2.3	<ul style="list-style-type: none">• Scatterplots• Correlation• Least-Squares Regression	
Week 4 Sept. 25, 27	Ch. 2.3 Ch. 2.4-2.5	<ul style="list-style-type: none">• Least-Squares Regression (Cont'd)• Caution about Correlation and Regression• Relations in categorical data	
Week 5 Oct. 2, 4	Ch. 4.1-4.3	<ul style="list-style-type: none">• Randomness• Probability Models• General Probability Rules	
Week 6 Oct. 9, 11	Ch. 4.4	<ul style="list-style-type: none">• Random Variables	Assignment #1 due
Week 7 Oct. 16, 18	Ch. 4.5 Midterm I	<ul style="list-style-type: none">• Random Variables Mean and Variance• Midterm (Oct 18th)	Midterm I covers Chapters 1-4
Week 8 Oct. 23	Ch. 5.1, 5.3	<ul style="list-style-type: none">• Toward Statistical Inference	No class on Oct. 25
Week 9 Oct. 30, Nov. 1	Ch. 6.1-6.2	<ul style="list-style-type: none">• Sampling Distribution• Confidence Intervals	
Week 10 Nov. 6, 8	Ch. 6.3-6.5	<ul style="list-style-type: none">• Test of significance• Using significance test• Power and Inference	
Week 11 Nov. 13, 15	Ch 7 Midterm II	<ul style="list-style-type: none">• Inference for the Mean• Midterm (TBD)	Midterm II covers Chapters 1-6
Week 12 Nov. 20, 22	Ch 7	<ul style="list-style-type: none">• Comparing two Means• Choosing Sample Size• Inference for non-Normal Populations	
Week 13 Nov. 27, 29	Ch. 8	<ul style="list-style-type: none">• Inference for a single proportion• Comparing two proportions	Assignment #2 due