ECO220Y Quantitative Methods in Economics 2012/13
Prof. Murdock, Economics Department, University of Toronto
<u>Second Half</u>: January 7 - April 30

Sections: meeting times, rooms (you may attend either)
    L0101: W 2:10-4:00, SS 2102 & F 10:10-11:00, SS 2102
    L0301: W 10:10-12:00, SS 2118 & F 10:10-11:00, MP 102
Office hours (when classes in session, starting Jan 14): M 3-4 & T 2-3, GE 312
Telephone & e-mail: 416-946-0656; See Section 5
Course website: chass.utoronto.ca/~murdockj/eco220/ & portal
TAs: Guenther Lomas, Bessie Qu, Lei Tang, Banghao Zhou
Drop by TA office hours (when classes in session): Guenther: T 3-4:30, GE 313;
Bessie: W 4:30-5:30, GE 313 ("GE": Economics Department, 150 St George St)
Economics Study Centre: MTWR 11:00 - 5:00, main floor Economics Department, 150
St George St. (GE 110); has two copies of our textbook

1 Academic Integrity, Civility, Accessibility & Help

You are expected to uphold your academic integrity. To check what this means see
http://www.utoronto.ca/academicintegrity/Academic_integrity.pdf. Also, make sure
your style of expression when speaking, writing, or acting is appropriate for an academic
environment and shows respect for your classmates and instruction team. For any
accessibility concerns, please visit http://www.accessibility.utoronto.ca/. If issues arise
please seek help right away by contacting us and/or using U of T's academic support
services listed at http://life.utoronto.ca/get-smarter/academic-support.htm. For issues
that extend beyond our course please seek the help of your College Registrar.

2 Prerequisites

An administrator will remove you for missing prerequisites: ECO100Y1(67%)/ ECO105Y1(80%);
MAT133Y1/(MAT123H1, MAT124H1)/(MAT135H1, MAT136H1)/MAT137Y1/ MAT157Y11. See:
http://www.economics.utoronto.ca/index.php/index/undergraduate/load/prerequisites.

3 Required Textbook & iClicker

The required textbook is a custom book that is a proper subset of the First Canadian
Edition of *Business Statistics* by Sharpe, De Veaux, Velleman, and Wright.[1] ***Consider
our textbook authors as co-instructors.*** A package with a full solutions manual and

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[1]The full First Canadian Edition is also acceptable as it has every chapter in our custom book plus more.

access to MyStatLab is available at the U of T Bookstore. Used copies may be available from 2011/12 and Summer 2012. ***Other books are not substitutable.*** To register for MyStatLab (comes with new copies and is not required) go to www.mystatlab.com and use course ID **instructo64205**. Using an iClicker is required: new and used ones are widely available (e.g. U of T Bookstore, amazon.ca). You may also borrow an iClicker from a friend/relative or you may share an iClicker with another student so long as they are ***not*** currently taking ECO220Y with Prof. Murdock. If you are unable to obtain an iClicker you may register for a short-term loan service.[2]

4   Learning Objectives

(1) Translate between plain English and statistical terms and concepts: identify key information regardless of wording or presentation, discriminate among statements that sound superficially similar but are fundamentally different, and distinguish incorrect statements from correct ones

(2) Select a suitable quantitative approach to a "new" situation and apply it

(3) Proficiently read output from various statistical software packages including STATA

(4) Use Excel to conduct statistical analyses

(5) Correctly interpret quantitative results for a non-technical or technical audience

(6) Draw valid statistical conclusions and steer clear of common pitfalls

(7) Explain what would change if a researcher made different choices or the data changed

(8) Identify the underlying assumptions in quantitative analyses and figure out how violations affect conclusions and interpretations

(9) Critically evaluate analyses without being dazzled by numbers, data and jargon

(10) Craft clear, concise and convincing written arguments

4.1   "What do I have to know for the tests?" "How to prepare?"

The learning objectives tell what you need to do to show that you understand the material at the required depth. Memorization yields only superficial understanding that falls far short of expectations. Instead, practice your skills by reworking examples from class and by constructing full replies for homework and old tests *without* using the solutions as a crutch.

If a concept, skill, or topic is addressed in lectures, required readings, tutorials, OR homework then it is testable. Major concepts will appear multiple times but not necessarily in every venue. Tests questions are inspired by our current course materials (homeworks, lectures, textbook, tutorials, handouts, etc.). You may hone your test-taking skills and assess the general expectations regarding your depth of understanding by working with old tests.

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[2]Stop by the Economics Department Reception Desk (150 St George St) weekdays between 9:00 and 4:00 for more information.

5 Communication and Course Websites

Prof. Murdock maintains the course website at `chass.utoronto.ca/~murdockj/eco220/` whereas our TAs use the portal. We make important announcements in lectures/tutorials, on the websites, and/or via e-mail to the class. You should not expect a personal reply if you e-mail me with a request. *If you have a private concern or if you would like a personal reply then please speak to me in person during office hours.* In contrast, if there is a course issue that you think I should know about (e.g. error in posted solutions, broken link on the course website, etc.), please feel free to notify me via e-mail. In other words, you can use e-mail with me the same way I do with you: to let the other know about something but not as part of a back-and-forth discussion. For the latter, we need to talk.

6 Weekly Lectures and TA Tutorials

Wednesday class meetings are typically PowerPoint presentations and they require your participation (i.e. using an iClicker). You may visit the course website, print out the lecture slides, and bring them to class. Black and white or gray scale print-outs are fine. ***Take your own notes: lecture slides are not lecture notes.***

We reserve the Friday time slot for required class meetings, required term tests, and optional TA Tutorials. TA Tutorials encourage student questions and focus on weekly homeworks. Watch for TA announcements through the portal about tutorials.

7 Required Readings and Homework

Readings and homework are posted on the course website. ***You are expected to complete the required readings before class.*** As you read, do the "just checking" segments. Also, the chapter closing segments such as "what can go wrong" and "ethics in action" are part of the required reading. Complete homework after the related lecture.

8 Excel Course Module

Instructor Chen (christy.chen@utoronto.ca) gives the required Excel Course Module (ECM) that complements our course. The ECM will start in January; you will have a chance to sign up for training held in a computer lab. (These are separate from regular TA tutorials.) While seated at a computer, you will learn how to do statistical analyses using an augmented version of Excel. These help you prepare for the Excel Test to be scheduled in late March that you take in a computer lab. The ECM has a portal course site.

9 Marking Scheme and Assessments

Assessment	% of Grade	Length	Dates, Time, Location
Term Work (Fall, Prof. Mazaheri)	35 %	–	–
iClicker (Winter)	5 %	–	Jan. 7 - Apr. 5, in classes
Term Test #3	10 %	50 min.	Friday, Feb. 15, 10:10 - 11, EX 200
Term Test #4	10 %	50 min.	Friday, Apr. 5, 10:10 - 11, EX 200
Excel Test	6 %	50 min.	TBA Prof. Chen in late March
Final Exam	34 %	3 hrs.	Apr. 10 - 30, TBA by A&S

For tests and the final examination you may bring a non-programmable calculator and you must bring your University of Toronto TCard. Multiple choice and other formats are used. All tests and exams are cumulative.

9.1 iClicker Class Participation

iClicker questions encourage you to prepare for class, to talk (about statistics) with your classmates, and to identify misunderstandings. While you should always come to class prepared and having completed the week's required readings, make an extra effort during the weeks when your iClicker counts for marks. ***Your iClicker replies count for marks six of the twelve weeks of classes in the Winter Term: if the last digit of your student number is even (0, 2, 4, 6, 8) your iClicker replies count during even weeks (weeks 14, 16, ..., 24) and if the last digit of your student number is odd (1, 3, 5, 7, 9) your iClicker replies count during odd weeks (weeks 13, 15, ..., 23).*** Just like more traditional class participation marks, quality matters. ***iClicker responses earn full marks if your answer is correct. However, iClicker responses earn partial marks (usually around half marks) even if your answer is incorrect.*** This is meant to help you focus on learning the course concepts and skills rather than getting worried about your marks. Each unanswered question earns 0 points. Point values can vary across questions.

If the green vote status light illuminates when you submit a response then it has been successfully recorded; a red light indicates a problem. If you forget your iClicker, I usually bring a backup.[3] Nearly all iClicker malfunctions – including a "dead" remote – are easily resolved: call the technical support toll free at 866-209-5698 or e-mail support@iclicker.com. ***You may attend L0101 or L0301: your iClicker works in both.***

To register go to http://www.iclicker.com/support/registeryourclicker/. ***You MUST use your UTORid as your "Student ID."*** It is *your responsibility* to: correctly

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[3]This is available first-come, first-serve to students who never requested one before. See me (when it would not interrupt the lecture) to give a deposit and to do the temporary registration.

register your iClicker, bring it to class, bring any aids you need (calculator, textbook, statistical tables), arrive on time, and stay for the entire lecture.

You may only enter responses yourself using your own properly registered iClicker. Your iClicker participation is a single assessment worth 5 percent of your course grade. A student suspected of cheating on any question jeopardizes this entire mark and possibly much more. All cases will be reported to the Economics Department and to the Office of Student Academic Integrity. A student that "helps" by operating someone else's iClicker can expect an equally harsh penalty. Protect your friends: do your own work.

There will be a make-up iClicker session open to everyone. (It will be around the end of the term: the date and time will be announced.) It can replace your lowest iClicker score during a single week, which could be a zero if you missed class that week. If you do worse during the make-up session it will not count against you.

9.2   Grading

A machine marks multiple choice questions. Your mark and machine-read responses will be posted on the course website as soon as possible. For long answer questions handwritten marks include the points you earned and, if applicable, the following symbols.

Symbol	Near the part of your answer that is:
X	Incorrect
?	Logically unclear, confusing or illegible
$\oplus$	Imprecise, incomplete, insufficiently shows work (Idea: "plus" more)

For partial credit, part of what you wrote must be clearly correct, directly relevant to the question asked, AND not contradicted by other parts of your answer. Requests for remarking must: (1) Be made IN WRITING and given to me along with your entire assessment, (2) Explain, in specific terms, WHY more points are justified for each disputed question, (3) Be submitted within one month. The entire assessment will be remarked: your mark can go up, down, or remain unchanged. These conditions do not apply to clerical errors such as adding up your score wrong. If a clerical error occurs, please let me know as soon as possible.

9.2.1   Marks versus raw scores

Your mark on a piece of term work reflects any class-wide adjustments in the raw percentage scores. Some examples: adding three points to everyone's score or not counting an unduly difficult/confusing question. Any adjustments will be explained to the class. Your mark, not your raw score, best reflects the quality of your submitted work.

9.3   Missed Term Tests

Term tests are crucial components of our course. If you cannot complete the tests as scheduled, consider re-taking this course when you are able. Students that miss a test must complete the make-up test. A make-up test can accommodate only one missed test: additional missed tests earn a mark of zero. To request a make-up test you must complete *ALL* of these steps.

First Step: Send an e-mail to Prof. Murdock[4] meeting *ALL* of these specifications.

(1) Your e-mail is sent *BEFORE* the start of the missed test. (In cases of extreme emergencies that happen immediately before the test (e.g. traffic accident on the way to the test) up to 24 hours will be allowed.)

(2) The subject line of your e-mail is "missed test."

(3) The e-mail is sent from your U of T e-mail account (and not from gmail, yahoo or some other server).

(4) The e-mail is in *PLAIN TEXT FORMAT* and has *NO ATTACHMENTS*. [5]

(5) It concisely explains why you missed the test.

(6) It lists all of the other courses are you currently taking and the names of your other professors. It identifies all term work (including tests and class attendance) you submitted in other courses on the same day or two days before or after the missed term test in our course or it says that there was no other term work submitted.

(7) The last sentence is: "I understand that it is a punishable academic offense to present false or misleading information in support of my request for accommodation for missed term work."

(8) The e-mail closes with your name and student number.

(9) It is 250 words or less in length. The writing is clear, concise, and appropriate for an academic setting. Everything except the last sentence is written in your own words.

Second Step: Check your e-mail. Within 24 hours of the missed test you will receive a reply: it will be a simple notification of when and where to take the make-up test.[6]

Third Step: Complete the cumulative make-up test. A missed make-up automatically earns a mark of zero. (If your excuse is questionable or unacceptable you will be notified when you turn in your completed make-up test. You will need to go see Prof. Murdock in-person to discuss the matter.)

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[4]My e-mail address is easily found by visiting the U of T Economics Department website.

[5]The e-mail is the required documentation. I have found documents such as medical certificates unhelpful because medical professionals focus on serving their patients, not defending academic integrity at U of T.

[6]Please refer to Section 5 regarding e-mail communication.

10 Topics and Required Readings

The course covers the following chapters in the required textbook. Within each chapter all sections are required with exceptions noted below. We typically finish the first eleven chapter in the first term and the remaining chapters in the second term.

Chapter 1: An Introduction to Statistics
Chapter 2: Data
Chapter 3: Surveys and Sampling
Chapter 4: Displaying and Describing Categorical Data
Chapter 5: Displaying and Describing Quantitative Data
Chapter 6: Randomness and Probability (Excluding Section 6.9 Reversing the Conditioning: Bayes's Rule)
Chapter 7: Scatterplots, Association, and Correlation
Chapter 8: Introduction to Linear Regression
Chapter 9: Random Variables and Probability Distributions (Excluding Sections 9.7 The Poisson Distribution and 9.11 The Exponential Distribution)
Chapter 10: Sampling Distributions
Chapter 11: Confidence Intervals for Proportions (Excluding Section 11.5 A Confidence Interval for Small Samples)
Chapter 12: Testing Hypotheses About Proportions
Chapter 13: Confidence Intervals and Hypothesis Tests for Means
(Chapter 14: Comparing Two Means (Included if time permits))
(Chapter 15: Paired Samples and Blocks (Included if time permits))
(Chapter 16: Inference for Counts: Chi-Square Tests (Only Section 16.5 Confidence Intervals for the Difference of Two Proportions) (Included if time permits))
Chapter 18: Inference for Regression
Chapter 19: Understanding Residuals
Chapter 20: Multiple Regression (Excluding Section 20.7 The Logistic Regression Model)
Chapter 21: Building Multiple Regression Models

In addition to the textbook there are some other required readings. One is Chapter 1, "Economic Questions and Data," from *Introduction to Econometrics, Third Ed.*, 2011, by James H. Stock and Mark W. Watson (SW11) and another is an academic journal article co-authored by a winner of the Nobel prize in economics: "Belief in the Law of Small Numbers" by Amos Tversky and Daniel Kahneman published in 1971 on pages 105 - 110 of Volume 76(2) of the *Psychological Bulletin* (TK71), which we provide in hardcopy. Other required readings and handouts are provided throughout the course in either electronic or hardcopy format.