

ECO220Y: Quantitative Methods in Economics, Summer 2013
Prof. Murdock, Economics Department, University of Toronto
First Half: May 13 - June 28

Sections: meeting times, rooms (you may attend either)

L0101: M 1:10 - 3:00, SS 2117 & TR 12:10 - 2:00, SS 2117

L0201: M 3:10 - 5:00, WI 1016 & TR 3:10 - 5:00, WI 1016

Office hours (May 17 - June 21): F 10:15 - 12:15, GE 312

Telephone & e-mail: 416-946-0656 & jennifer.murdock@utoronto.ca*See Section 6

Course website: chass.utoronto.ca/~murdockj/eco220/ & portal

TAs: Ashique Habib, Guenther Lomas, Mathieu Marcoux, Juan Morales, Joshua Murphy, Lei Tang

TA office hours: Announced on portal

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 access to MyStatLab is available at the U of T Bookstore. Used copies may be available from 2012/13, 2011/12 and Summer 2012. **Other books are not substitutable.** To

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

register for MyStatLab (comes with new copies and is not required) go to www.mystatlab.com and use course ID **instructo57342**. 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 Summer Session is More than Twice as Fast

This is a Y course taught in only 12 weeks of classes with another week for the midterm and a week for the final exam. In contrast, during the regular academic year it is spread over 33 weeks. Hence you need to devote more than twice as much time per week. However, if you keep up, this can be an advantage. The course material in ECO220Y is highly cumulative and with the intense schedule you have less time to forget important skills and concepts.

5 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

5.1 “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

²This is only a short-term loan service: you need to return the borrowed iClicker remote after each class. Stop by the Economics Department Reception Desk (150 St George St) weekdays between 9:00 and 4:00 for more information.

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.

6 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. It may take a few business days to receive a reply if you e-mail me. For many matters my reply will ask you to speak with me or a TA in person or to consult the course syllabus. For example, e-mail is not an efficient medium for explaining course concepts or solutions to practice problems.

7 Weekly Lectures and TA Tutorials

Tuesday and Thursday 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.***

Mondays are reserved for required class meetings, tests, and optional TA Tutorials. TA Tutorials encourage student questions and focus on weekly homeworks. Watch for TA announcements through the portal. Because holidays and tests fall on Mondays, some TA Tutorials will be on Fridays. For the first half of the course, there are six regular TA tutorials:

- (1) Friday, May 17 1:10 - 3:00, SS 2117 OR 3:10 - 5:00, SS 2117
- (2) Monday, May 27 1:10 - 3:00, SS 2117 OR 3:10 - 5:00, WI 1016
- (3) Friday, May 31, 1:10 - 3:00, WI 1016 OR 3:10 - 5:00, WI 1016
- (4) Monday, June 10, 1:10 - 3:00, SS 2117 OR 3:10 - 5:00, WI 1016
- (5) Monday, June 17, 1:10 - 3:00, SS 2117 OR 3:10 - 5:00, WI 1016
- (6) Friday, June 21, 1:10 - 3:00, SS 2117 OR 3:10 - 5:00, SS 2117

8 Required Readings, Ungraded Homework & Graded Homework

Readings and homework are posted on the course website. *Complete the required readings before class.* Do the “just checking” segments. Also, the chapter opening and closing segments such as “what can go wrong” and “ethics in action” are always part of the required reading. Complete homework after the related lecture. Within the homeworks, graded questions may appear marked “[GRADED: DUE MONTH, DAY].” Submit it in hard-copy no later than the due date: you may turn it in at lectures, tutorials, or to the Economics Reception Desk (open 9:00 - 4:00 on business days at 150 St. George). To prepare your graded homework, use the homework heading on our course web site: include only the graded question, not your entire homework set. Typically you can pick up your marked paper at the next TA tutorial. If you have less than a perfect score, re-work it noting the marks made by the TAs: Section 10.3 explains the meaning of the symbols. Homeworks do not count towards your course grade, but solving them and receiving feedback is important. For the graded questions, no solutions will be posted or given in class, review sessions or tutorials. If you are stuck, bring your graded homework to TA office hours. TAs will help only those who have made a significant attempt at the problem.

9 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 late June; 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 early August that you take in a computer lab. The ECM uses the portal.

10 Marking Scheme and Assessments

Assessment	% of Grade	Length	Dates, Time
iClicker (1st Half)	5 %	–	May 16 - June 20, in classes
Term Test #1	14 %	110 min.	Mon., Jun. 3, 1:10 - 3
Midterm Test	28 %	3 hrs.	Wed., Jun. 26, 2:00 - 5
Term Work (2nd Half, Prof. Tanaka)	17 %	–	–
Excel Test	6 %	50 min.	TBA Prof. Chen in early August
Final Exam	30 %	3 hrs.	Aug. 13 - 16, 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. However, Prof. Tanaka will write the final exam.

10.1 Academic Conflicts

If you notify me at least two weeks in advance, we can accommodate documented direct academic conflicts by having you write the test on the same day but at a different time. A direct conflict is **overlapping** times for required course work. If you have a conflict, send me an e-mail explaining your situation and attach a copy of your ROSI personal timetable.

10.2 iClicker Class Participation

iClicker questions encourage you to prepare for class, to talk about statistics with your classmates, and to identify misunderstandings. Complete required readings before class. Like traditional class participation, 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 helps you focus on the course concepts and skills rather than excessively worrying about marks. Each unanswered question earns 0 points. Point values can vary across questions.

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 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.

Our regular lectures on Thursday, June 20 serve as a make-up iClicker session. It can replace your lowest iClicker score during a class, which could be a zero if you missed a class. If you do worse during the make-up session it will not count against you.

A green light illuminates on your iClicker remote when your response has been successfully recorded; a red light or lack of any light indicates a problem. If you forget your iClicker, I usually bring a backup. Nearly all iClicker malfunctions – including a “dead” remote – are easily resolved: call the technical support at 866-209-5698 or e-mail support@iclicker.com.

You may attend L0101 or L0201: your iClicker works in both. If you attend the same lecture twice, only the first one will count towards your mark.

10.3 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
⊕	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 two weeks. 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.

10.3.1 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.

10.4 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 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*.³
- (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.
- (7) 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.
- (8) 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.”
- (9) The e-mail closes with your name and student number.
- (10) 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.

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.)

11 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 half and the remaining chapters in the second half.

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

Chapter 7: Scatterplots, Association, and Correlation

Chapter 8: Introduction to Linear Regression

³The 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.

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 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). Required readings and handouts (beyond the textbook) are provided throughout the course in either electronic or hardcopy format.