ECO220Y1Y: Introduction to Data Analysis and Applied Econometrics, 2023/2024

1 Key Information

Instructor: Karen Ugarte Bravo

Sections: L0501, L5101, L0601

Scheduled course times:

Wednesdays: 3-5pm (L0501), 5-7pm (L5101)

Thursdays: 3-5pm (L0601)

Course Email: eco220.ugartebravo@utoronto.ca

Prerequisites: The course prerequisites are listed at https://artsci.calendar.utoronto.ca/course/eco220y1. An administrator will remove anyone missing prerequisites and I cannot waive prerequisites.

2 Welcome to ECO220Y1Y

Welcome to ECO220Y1Y, where you will learn how to use some of the statistical tools and methodologies used by economists to answer interesting economic questions!

Our course is coordinated across the seven lecture sections. Sections LEC0501, LEC5101, and LEC0601 are taught by Professor Ugarte-Bravo and share this syllabus and our Quercus site (https://q.utoronto.ca/courses/318227). All seven sections participate in the Data Analysis Course Module (DACM), taught by Professor Murdock, where you dive into real data and research, and replicate key findings.

3 Learning Objectives

- Translate between plain English and statistical terms and concepts: identify key information regardless of wording and distinguish incorrect statements from correct ones
- Select and apply a suitable quantitative approach to a new situation while making your reasoning clear: may require sentences, hypotheses, equations, calculations, fully labeled graphs, diagrams
- Proficiently read output from various statistical software packages presented in the course
- Use Excel to analyze data and replicate published results
- Correctly interpret quantitative results for a non-technical or technical audience
- Draw valid statistical conclusions and steer clear of common pitfalls
- Explain what would change if a researcher made different choices or the data changed

- Identify the underlying assumptions in quantitative analyses and figure out how violations affect conclusions and interpretations
- Read and critically evaluate analyses
- Effectively apply course concepts to a wide range of contexts from popular press articles to papers in peer-reviewed academic journals
- Assess available data or propose a data collection plan to address a research question
- Craft compelling, concise, precise, clear, and coherent written arguments

4 Required Textbook

The text book required for our course is Business Statistics (2020), Fourth Canadian Edition by Sharpe, De Veaux, Velleman, and Wright. You may purchase either of the options listed below.

- The bound hardcover textbook that also includes an access code for the eText and MyLab Statistics from the U of T Bookstore for $189.99 (ISBN 9780136726548),
  - Note: MyLab Statistics, which comes with this first option, is NOT required.
- the eText directly from Pearson for $49.99 (ISBN 9780136964032), or
- a used copy of the Fourth Canadian Edition. Older editions or the US / international editions are not good substitutes: they are missing topics and do not match the numbering in our book.

Our required textbook highlights important points with boxes (sometimes in the margins): take the boxes seriously, including "Just Checking." Also, chapter openers and closers such as "What Can Go Wrong?" are always part of the required reading.

5 Required Lecture Videos

Multiple sections of ECO220 (that includes sections taught by Professor Ugarte-Bravo and Professor Murdock) share prerecorded lecture videos. These videos are shared course material and considered a required part of the course. For each unit, the required videos and slides are on the Quercus Course Calendar in the Monday cells. Complete readings before watching the videos. Then, watch the lecture videos before that week's workshop on that unit. Block out a regular time to watch, stay on task, keep up, and avoid distractions.

6 Wednesdays/Thursdays: Workshops

Workshops with the professor will take place on Wednesday for sections LEC0501 and LEC5101 and on Thursdays for L0601, starting the week of September 11. Complete the unit's readings and lecture videos before your workshop. Expect to be active in solving questions, writing, and interacting with your classmates and the instructional team. You must attend with your ACORN section. Do not schedule any conflicts during your two-hour ACORN lecture time slot. See the Quercus Workshops page for more details.

Your preparation and regular and active participation counts towards your participation mark (see Section 9.1). The quality of participation matters. The workshops are an opportunity to participate and receive feedback on your attempts at test-like questions, and I would strongly advise you to attend all workshops

if possible. You will only learn your participation mark indirectly after your course grade is on ACORN and final exams are returned. Given your other known marks, you can deduce your participation mark, which cannot be appealed. Course grades reflect a fair assessment of submitted work and are not subject to negotiation. For a missed workshop, see Section 10.3.

7 Fridays: DACM practicums or Term Test

Fridays are reserved for either DACM practicums or term tests. One of these two activities happens most Fridays. Do not schedule any conflicts on Fridays from 3-5pm.

7.1 DACM Practicums

Ten Fridays have required DACM practicums. You learn data analysis skills, reinforce your understanding of core course curriculum, and practice effective writing skills. Bring your laptop with an up-to-date installation of Microsoft 365 ProPlus. Also, bring pencils, erasers, your TCard, and the course aid sheets. Be prepared to actively work with others, do analyses, and write. Complete the assigned readings in the DACM Handbook ahead of time. **You must attend with your ACORN section.** (If you attend with the wrong section you *cannot* get credit for submitted work.) Accept your invitation to join the DACM Quercus site https://q.utoronto.ca/courses/326257: you will receive your invitation on September 15.

Quality matters for marks in DACM practicums. For DACM practicums, we return work via Crowdmark: check your U of T e-mail. For a missed practicum, see Section 10.3.

7.2 Term Tests and Final Exam

The format for each term test will be announced on Quercus in advance. The aid sheets – formulas and statistical tables – for the entire course are on Quercus and we give these to you during tests and exams. The final exam is cumulative.

Topics addressed in the lecture videos, workshops, tutorials, homework, required readings, and DACM are testable. If a concept appears in multiple venues, that signals high importance. Construct full replies for homework and other suggested practice materials in test-like conditions. If you cannot solve a question after a sustained effort, turn to your notes, book, and homework. Only as a last resort, ask a person or look at the solutions. Browsing solutions (or peeking) undermines your study. Use solutions to grade your own answers.

8 Ungraded homework

Each unit has ungraded homework (including end-of-chapter textbook exercises and required problems) and solutions on Quercus. (For more on solutions to textbook exercises, see the Readings page on Quercus.)

9 Course Grades and Marking

9.1 Grading Scheme

Table 1 describes the estimated dates and weights of the course assessments. As noted below the table, the dates are estimates and serve as a rough guides to the approximate timing in our course, the actual timing may be plus/minus days or weeks. In addition to Table 1, carefully read Section 10.2 which explains the automatic accommodated weights.

Table 1: Grading Scheme

Evaluation	Dates	Weight
Term test 1	Fri. Oct. 27, 3-5pm	16%
Term test 2	Fri. Dec. 1, 3-5pm	16%
Term test 3	Fri. Feb. 9, 3-5pm	14%
Term test 4	Fri. Apr. 5, 3-5pm	14%
Workshop participation	Weekly	8%
DACM	Sept 22, Oct 13, Oct 20, Nov 24, Jan 12, Jan.26, Feb 16, Mar.8, Mar.22, Apr.8	8%
Final Exam	TBA: Apr. 10-30	24%

Note:

The quality of participation matters for marks in workshops and DACM practicums.

For workshops and DACM practicums you must attend with you ACORN section.

Dates are estimates.

These are rough guides to the approximate timing in our course: actual timing may be plus/minus days or weeks.

9.2 Remark Requests

For a remark request you must: (1) submit a **Remark Test** MS form, links to these MS Forms are available on the Additional Links page on Quercus, (2) Explain WHY more points are justified, (3) Be submitted within **TWO WEEKS** of the work's return to the class. Your mark may remain unchanged, go up, or go down. These are given a fair look: TAs are not seeking to penalize those with genuine marking concerns. Requests are reviewed after the two-week deadline, not immediately. We will not consider any remark requests after the deadline.

10 Missed Work and Accommodations

Complete work as scheduled in Section 9.1. Any missed work earns a mark of zero. This section explains special accommodations for: illness, injury, personal/family problems, joining our course late, religious reasons, extracurricular conflicts, technology problems, internet or power outages, quarantine issues, accessibility concerns, and/or other challenging situations. Remember, **for significant challenges, which last more than a week, work with your College Registrar immediately.**

10.1 Missing a Term Test

For a missed term test, complete BOTH of these steps.

First Step: Complete **Missed Term Test** MS Form available on the Quercus Additional Links page. **It must be submitted AT LEAST ONE HOUR BEFORE THE START TIME.** It is unacceptable to fail to show up for an important engagement without any advance notice. In extreme circumstances (e.g. being arrested), we may accept a later form, but unconvincing reasons for not submitting earlier are factored in when assessing your performance. All questions in the MS form are required, including a copy of your Absence Declaration (https://registrar.utoronto.ca/policies-and-guidelines/absence-declaration/). **Note, the Absence Declaration form can only be used once per academic term (e.g., once per the fall term, not per course) and up to seven consecutive days.** We do NOT wish to see any document completed by a doctor or other professional.

Second Step (if miss Test #1, #2, or #3): Write all other tests as scheduled. Write a cumulative make-up test. Within three business days after the date of the missed test, we write to your U of T e-mail. Subsequent e-mails may clarify the date, time, and location of the make-up. Students are expected to be

available both during the term and during the exam periods and to be ready to write the make-up test. We do not accommodate a missed make-up test nor do we schedule individual writing times given travel plans, work schedules, or other issues. (Also, note that make-up tests are restricted, which means that you will not see it in Crowdmark. If you wish to practice and get feedback, see the posted regular test and mark yourself against the posted solutions.)

Second Step (if miss Test #4): Write the final exam. The weight of Term Test #4 shifts to the final exam and the weights of Term Tests #1, #2, and #3 are as stated in the table in Section 9.1.

We will not accommodate more than one missed test in a term. If your situation is such that you are unable to complete more than one test, you should consult your College Registrar for advice on dropping the course and retaking it when you are in a better position to complete the required work.

10.2 Automatic Accommodated Weights for Relatively Poor Performance

Automatic adjusted weights may help if your performance is relatively poor for one test because of any kind of problem or challenge. If you write all four term tests, and if it helps your course grade, we automatically lower the weight on your lowest test by 8 percentage points and increase the weight of the final exam by 8 percentage points. Any questions around your academic integrity for any work disqualify you from automatic adjusted weights. Note that if you miss Term Test #4 there are no automatic adjusted weights because the final exam weight is already substantially increased according to the steps in Section 10.1.

10.3 Automatic Accommodations for Missed Workshops or a DACM Practicum

To accommodate those who cannot attend up to three workshops, we drop the three lowest weeks. For DACM practicums, we automatically drop the lowest two. Save these for an illness or other emergencies entirely outside your control: do not miss because you are busy or for any potentially avoidable reasons. This adjustment is automatic and also accommodates students who attend but face any challenges negatively affecting their performance. These are *automatic*: please do *not* contact us about missing a workshop or DACM practicum.

11 Proactively Avoid Problems and Promptly Address Issues

Proactively maintain your devices and software. For Zoom, you must download and regularly update the Zoom Desktop Client and you must use UTORid authentication. Immediately contact The Information Commons Help Desk with any technical issues around your devices, software, Quercus, or connectivity.

12 Academic Integrity

Please do not create a horrible situation for yourself, your classmates, our TAs, and myself. Even if you are suffering stress, under extreme pressure, far behind, facing failure, and/or lacking self-confidence, cheating is not worth it. Infractions can take many, many agonizing months to resolve and sanctions can be severe. We must all work together supporting the integrity of our course and U of T. Read this link and sublinks https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity.

13 Accessibility, Absenses and Help

If you require accommodation, remember to register with both Accessibility Services (at https://studentlife.utoronto.ca/department/accessibility-services/) and Accommodated Testing Services (ATS) (at https://lsm.utoronto.ca/ats/).

Everyone can benefit from U of T's support services, including the Academic Success Center. In addition, if you find yourself in a particularly challenging situation, you will need to **work with your College Registrar**. They can provide comprehensive guidance and, when appropriate, contact your professors for you while maintaining your privacy. This requires working closely with your College Registrar, and not merely having them restate your requests to your professors. Remember, for significant challenges, which last more than a week, work with your College Registrar immediately. Also, please note that there are limits to the situations that we can accommodate: in some cases the only option is to drop the course.

14 Readings

Our course includes significant readings from the required textbook as wells as important supplements that are available to you at no charge on the Quercus site. The Course Calendar page on our Quercus site gives the reading assignment for each week. Complete readings before attending lectures.

The required readings are listed below. The supplements created for our course are marked in boldface below and the chapter numbers reference our required textbook.

- **Prerequisite Review for ECO220Y1Y, 2023/24 pages 1 - 42**
- **The DACM Handbook for ECO220Y1Y, 2023/24 pages 1 - 182**
- 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: Scatterplots, Association, and Correlation
- **SW11: Chapter 1, Economic Questions and Data pp. 1 - 13 from Introduction to Econometrics, Third Ed., 2011, by James H. Stock and Mark W. Watson**
- Chapter 7: Introduction to Linear Regression
- **Logarithms in Regression Analysis with Asiaphoria for ECO220Y1Y, 2023/24 pages 1 - 27**
- Chapter 8: Randomness and Probability
- Chapter 9: Random Variables and Probability Distributions (Excluding Sections 9.7 The Poisson Distribution, 9.12 The Exponential Distribution, and "Normal Probability Plots" pp. 280-2)
- **Normal Table: Read it, Use it for ECO220Y1Y, 2023/24 pages 1 - 14**
- Chapter 10: Sampling Distributions
- Chapter 11: Confidence Intervals for Proportions
- Chapter 12: Testing Hypotheses About Proportions
- Chapter 13: Confidence Intervals and Hypothesis Tests for Means
- Chapter 14: Comparing Two Means
- Chapter 18: Inference for Regression (Excluding "How does the Normal probability plot work?" pp. 607-8)

- Chapter 19: Understanding Regression Residuals
- Chapter 20: Multiple Regression
- Chapter 21: Building Multiple Regression Models emphasizing Sections 21.1 Indicator (or Dummy) Variables, 21.2 Adjusting for Different Slopes – Interaction Terms, and Quadratics (online) (Excluding "Residuals and Standardized Residuals" and "Influence Measures" pp. 737-9)