

ECO220Y1Y: Introduction to Data Analysis and Applied Econometrics, 2022/2023

1 Key Information

Instructor: Karen Ugarte Bravo

Sections: L0401, L0501, L5101

Scheduled course times: Thursdays: 12-2pm (L0401), 4-6pm (L0501), 6-8pm (L5101)

Fridays: 3:00 pm - 5:00 pm (all sections)

Course Email: eco220.ugartebravo@utoronto.ca and eco220+dacm@utoronto.ca (for DACM related questions)

TAs: Thomas Kent Stringham, Christie Sikubwabo, Bardia Izadkhahi, Annabel Thornton, Daniel Quintero, Qu Wei Ji

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 six lecture sections. Sections LEC0401, LEC0501, and LEC5101 are taught by Professor Ugarte-Bravo and share this syllabus and our Quercus site (<https://q.utoronto.ca/courses/277452>). All six sections write a common final exam and participate in the Data Analysis Course Module (DACM) 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

All six sections of ECO220 (that includes sections taught by Professor Ugarte-Bravo and Professor Murdock) share the prerecorded lecture videos. These videos are shared course material and considered a required part of the course for all sections. The lecture videos have been developed to provide consistency in the material presented to students across all sections of ECO220.

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 Thursdays: Workshops

Workshops with the professor will take place on Thursdays, starting September 15. Complete the unit’s readings and lecture video before your workshop. For example, before Workshop 2 on September 22, complete the Unit 2 readings and videos posted on the Course Calendar page in Quercus in the cell for Monday, September 19. Expect to be active in solving questions, writing, and interacting with your classmates and the instructional team. Your preparation and regular and active participation counts towards your participation mark (see Section 10.4). You must attend with your ACORN section: you cannot switch times for any reason. Do not schedule any conflicts during your two-hour ACORN time slot. See the Quercus Workshops page for more details.

7 Fridays: Term Tests, DACM practicums, or TA tutorials

Fridays are reserved for either term tests, DACM practicums, or TA tutorials. One of these three activities happens almost every Friday. Instead of meeting on the first day (Friday September 9), you should read this syllabus and work on the readings and lecture video for Unit 1 posted on Quercus Course Calendar. Do not schedule any conflicts on Fridays from 3-5pm.

7.1 DACM Practicums

Some weeks have required DACM practicums (50 minutes) in the Friday 3-5pm meeting time. These give you a chance to learn practical data analysis skills and to reinforce your understanding of our core course curriculum. Bring your laptop with an up-to-date installation of Microsoft 365 ProPlus. Be prepared to actively work with others. Complete the assigned readings in the DACM Handbook and the DACM companion videos ahead of time. You must attend with your ACORN section in your assigned classroom at the assigned time given in the DACM page on Quercus. Your preparation and regular and active participation counts towards your DACM mark (see Section 10.5).

7.2 TA Tutorials

The course TAs will host synchronous virtual tutorials on some Fridays, please see the Course Calendar page on the course Quercus site for tutorial dates. The tutorials are designed to give you practice applying course concepts and to build your econometric problem solving skills. The tutorial material will be available on the Zoom TA Tutorials page on the course Quercus site; complete the tutorial material in advance of the tutorial. The tutorials will be 50 minutes long and multiple tutorial sections will take place during the scheduled course time Friday afternoons (3-5 pm). Additional tutorial sections will be available earlier in the day on Friday. Using the People tool on Quercus, you may sign-up for a tutorial section. Tutorial enrollment opens September 16: sign-up with care, ensuring no conflicts, and thinking ahead to the Winter term.

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 Usual Study Routine

The Quercus Course Calendar helps students visualize how the course will progress. It starts with each unit's materials – readings, lecture slides and videos, ungraded homework, and relevant parts of the DACM Handbook – and then you attend subsequent workshops, tutorials, and/or DACM practicums.

1. Complete the unit's readings in the textbook, supplements, and/or the DACM Handbook.
2. Watch the unit's lecture videos and any DACM companion videos.
3. Attend your workshop.
4. Complete the ungraded homework. You may also work on this earlier.
5. In weeks without a term test, attend your DACM practicum or your TA tutorial.

10 Course Grades and Marking

10.1 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 alternate weights and Section 11.2 which explains the automatic accommodated weights.

Table 1: Grading Scheme

Evaluation	Dates	Weight
Term test 1	Fri. Oct. 28, 3-5pm	14%
Term test 2	Fri. Dec. 2, 3-5pm	14%
Term test 3	Fri. Feb. 10, 3-5pm	14%
Term test 4	Fri. Mar. 31, 3-5pm	14%
Participation	September 15 - April 10	10%
DACM	Sept.16, Sept.30, Oct.14, Nov.25, Jan.27, Mar.3, Mar.17, Apr.6	10%
Final Exam	TBA: Apr. 11-28	24%

Note:

Section 10.2 explains the alternate weights.

Section 11.2 explains the automatic accommodated weights

Dates are estimates.

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

10.2 Alternate Weights (for any forced shifts online)

The grading scheme in Section 10.1 presumes that all four term tests and the final exam are in person as planned. Otherwise, alternate weights apply for the marking scheme.

- If the final exam cannot be in person it becomes a final assessment and its weight decreases to 20%.
 - If any of the term tests can be held in person, then the 4 percentage point weight reduction of the final exam is evenly redistributed among the in-person term tests. If none of the term tests can be held in person, the weight of participation increases to 14%.
- If the final exam can be in person but any of the term tests could not be in person, then the weight of the final exam increases to 35% and the weight of any term tests not in person are reduced equally.

10.3 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.

10.4 Participation

Your regular and active participation in **workshops and TA tutorials** is the major component of your participation mark, however participation marks may also be assigned to other activities in the course. The quality of participation matters. The workshops and tutorials are an opportunity to participate and receive feedback on your attempts at test-like questions, and I would strongly advise you to attend all tutorials 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.

10.5 DACM

DACM is worth 10% of your course grade and DACM cases and skills can appear in other assessments. DACM Assignments #1 and #2 are worth 3% and 4%, respectively: you present your analysis of data and no collaboration is allowed. Your participation in DACM practicums is worth 3% of your DACM grade (see Section 7.1).

10.6 Remark Requests

For a remark request you must: (1) submit a **Remark Test** or a **Remark DACM Assignment** 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.

11 Missed Work and Accommodations

Complete work as scheduled in Section 10.1. 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, travel issues, accessibility concerns, and/or other challenging situations. Remember, **for significant challenges, which last more than a week, work with your College Registrar immediately.**

11.1 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. We do NOT wish to see any document completed by a doctor or other professional. All questions in the MS form are required, including a copy of your Absence Declaration (<https://help.acorn.utoronto.ca/blog/ufaqs/declare-an-absence/>).

Second Step: Complete all other term tests and the final exam as scheduled. Within three business days of the missed test, you will receive an e-mail to your U of T account. Subsequent e-mails may clarify the date, time, and location of the make-up test. Your make-up test and MS Form submission are considered for your

course grade. There are no accommodations for missing the make-up test. The make-up test is a cumulative test.

11.2 Automatic Accommodated Weights for Relatively Poor Performance

If your performance on one test is relatively poor because of any kind of problem or challenge, we are able to hold all of our term tests and final exam in person as planned, and it helps your course grade we will lower the weight on your lowest test to 6% and reweight to the final exam (increase the weight by 8 percentage points). Any questions around your academic integrity for any work disqualify you from these helpful reweighting opportunities. If any term tests or the final exam are forced online, then there are no automatic accommodated weights and Section 10.2 applies.

11.3 Automatic Accommodations for Missed Workshops, TA tutorial or a DACM Practicum

To accommodate those who cannot attend up to three workshops, we drop the three worst weeks. To accommodate those who cannot attend one DACM practicum, we drop the worst week. To accommodate students who cannot attend ONE TA tutorial, we drop the worst week. 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.

12 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.

13 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>.

Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (<https://uoft.me/pdt-faq>).

14 Accessibility, Absences 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. **Everyone must officially declare all absences affecting any work in our course (at <https://help.acorn.utoronto.ca/blog/uFAQs/declare-an-absence/>)**. 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.

15 Readings

Our course includes significant readings from the required textbook as well 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, 2022/23 pages 1 - 45**
- **The DACM Handbook for ECO220Y1Y, 2022/23 pages 1 - 183**
- 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, 2022/23 pages 1 - 28**
- 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, 2022/23 pages 1 - 7**
- 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)