

ECO220Y1Y: Introduction to Data Analysis and Applied Econometrics, 2021/2022

1 Key Information

Instructor: Karen Ugarte Bravo

Sections: L0101, L0201, L5101

Scheduled course times: Mondays: 11-1pm (L0101), 3-5pm (L0201), 6-8pm (L5101)

Thursdays: 6:00 pm - 8:00 pm (all sections)

TAs: Xiner Xu (head TA), Anusha Arif, Zaid Idris, Vivian Xu, Frederik Dufour, James Macek

Prerequisites: The course prerequisites are listed at <https://arts.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 LEC0101, LEC0201, and LEC5101 share this syllabus and our Quercus site (<https://q.utoronto.ca/courses/237119>). 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. Our DACM Quercus site (<https://q.utoronto.ca/courses/241862>) includes the DACM Handbook, companion videos, and data files.

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 Grading Scheme

Table 1: Grading Scheme

Evaluation	Dates	Weight
Term test 1	Thurs Oct. 28, 6-8pm	12.5%
Term test 2	Thurs Dec. 2, 6-8pm	12.5%
Term test 3	Thurs Mar. 3, 6-8pm	12.5%
Term test 4	Thurs Mar. 31, 6-8pm	12.5%
Participation	See Quercus for tutorial scheduling during the Fall and Winter terms	12.5%
DACM	Oct.1, Oct.22, Jan.21, Feb.18, Mar.25, Apr.8	12.5%
Final Exam	TBA: Apr. 11-29	25%

Note:

Section 5 explains alternate weights. Section 16 explains accommodated weights

Dates are estimates. DACM dates are estimated due dates

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

5 Alternate Weight (for any forced shifts online)

The grading scheme in Section 4 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 5 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 17.5%.
- 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 32.5% and the weight of any term tests not in person are reduced equally.

6 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 9780135582084),
 - Note: MyLab Statistics, which comes with this first option, is NOT required. To gain access to the Pearson eText with this option, enter the Course ID **murdock20797** in MyLab.
- the eText directly from Pearson for \$49.99 (ISBN 9780136964032),
- the unbound loose-leaf print version directly from Pearson for \$65.00 (ISBN 9780135469019), 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. Consider our textbook authors as co-instructors.

7 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 schedule 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, 2021/22 pages 1 - 43**
- **The DACM Handbook for ECO220Y1Y, 2021/22 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, 2021/22 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, 2021/22 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)

8 Lectures

Lectures will take place on Mondays, starting September 13. Lectures will be in person unless University guidelines advise otherwise. Please see the Lecture Slides page of the course Quercus site for the slides that accompany lectures. Note that studying the slides is by no means a replacement for attending lecture, they are simply there to facilitate note taking during lecture. Be sure to complete the readings before lecture and come to class prepared with a digital or printed copy of the slides and ready to take notes. You must attend lecture with your ACORN section at your assigned time: we cannot permit you to switch times for any reason. Do not schedule any conflicts during your two-hour ACORN time slot.

9 Tutorials

The course T.A.s will host synchronous virtual tutorials on some Thursdays, 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 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 Thursday evenings. Additional tutorial sections will be available earlier in the day on Thursdays. Using the People tool on Quercus, you may sign-up for a tutorial section. Tutorial enrollment opens September 17 and locks at 4pm on September 24: sign-up with care, ensuring no conflicts, and thinking ahead to the Winter term.

10 Participation

Your regular and active participation in 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. This includes answering any polls, contributing to the chat (via typing), answering questions verbally, and/or via other activities. Tutorials may evolve over the year as everyone gains experience with the group dynamics and available technologies. The grading scheme for tutorial participation allows for you to miss one tutorial with out penalty. The 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.

11 Data Analysis Course Module (DACM)

Accept your invitation to join the DACM Quercus site. You cannot use the Canvas Student App: instead, use a laptop or desktop computer. Also, you need an up-to-date installation of Microsoft 365 ProPlus. There are five online quizzes (Modules A, B, C, D, and E) and one assignment: your DACM mark is the sum of the points earned. DACM is one assessment where completion is spread over time.

There is NO collaboration of any kind permitted. The ONLY allowed aids are our DACM Handbook, Excel, a calculator, our course aid sheets, the DACM companion videos by Kate, our textbook, and other materials on the DACM Quercus site. Using any unauthorized aids and/or collaborating with others, whether giving or receiving assistance, on ANY question on ANY quiz or the assignment, or engaging in plagiarism, is an academic infraction for DACM. Just like a test, it is NOT prorated depending on how many answers are involved. Hence, the whole 12.5 percent weight is always at stake and any suspected infractions will go to the Dean's Office or higher where the most serious sanctions are imposed. The DACM Handbook (available on the DACM Quercus site) explains how to prepare effectively for quizzes. The DACM Quercus site explains the quiz formats and will also give details about the assignment.

12 Term Tests and Final Exam

The format for each term test and the final exam 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 lectures, 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.

13 Ungraded homework

Under the Homework page on the course Quercus site you can find ungraded homework and solutions most weeks. These include assigned end-of-chapter text-book exercises and problems that supplement the textbook.

14 Questions, Office Hours, and Emails

Myself and some TAs will host office hours each week and the office hours schedule is available on Quercus. The office hours schedule may change throughout the term so be sure to check Quercus in advance. Use office hours to ask any questions you may have.

You may also post your question on Piazza, a platform that allows for student-to-student Q&A. If you have a questions which may be of interest to other students, it is recommended that you post it on Piazza. Some helpful tips for posting on Piazza are listed below.

- Give a descriptive title to your post: for example, “Lecture 23, Slide 7: Meaning of R-squared?” or “HW 4, Required Problem 2” rather than “Help with lecture” or “Homework question.”
- Specific questions that include relevant images (e.g. relevant screenshots or a scan of your attempt) tend to have the best chances of a helpful answer.

Most questions can be answered at office hours or on Piazza, leaving *limited* circumstances where E-mailing questions is necessary. E-mail responses may re-direct you to office hours or Piazza.

15 Remark Requests

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

Also, we will not consider individual remark requests for machine-marked questions: if there is an error in a question and/or answer then all submissions will be remarked and/or some other general adjustment made. For numeric questions, often people are upset when they are close, but outside the margin of error. For example, the question asks for an answer accurate to at least the nearest third decimal place with standard rounding, the correct answer is 0.043, but you type either 0.044, 0.0437, 0.042, or 0.0424 and are marked wrong. You cannot request partial credit or a remark in such a case. Requirements are set with care and with sound pedagogical reasons.

16 Missed Work and Accommodations

Complete work as scheduled in Section 4. 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.

To accommodate students who cannot attend ONE TA tutorial, we drop the worst week. To catch up, review tutorial material and use TA student hours. Save this 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 some weeks.

For ONE entirely missed DACM quiz or ONE entirely missed term test, complete ALL of these steps.

First Step: Complete **Missed Term Test** or **Missed DACM Quiz** which are MS Forms and the links are 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 (for one missed term test): Complete all other term tests and the final exam as scheduled. Your performance on those and your MS Form submission will be taken under advisement in determining your final course grade. However, if some term tests and/or the final exam cannot occur in person, you may be notified via your U of T e-mail about a cumulative oral make-up test, where your performance on that would also be taken under advisement. Any reweighting is at my discretion and will privilege work that can occur in person and the cumulative final exam.

Second Step (for one missed DACM quiz): Complete all other DACM quizzes and the DACM assignment as scheduled. Your performance on those and your MS Form submission will be taken under advisement in determining your final course grade. Accommodations for missing more than one test or quiz are extremely limited: (1) a College Registrar writes to me after working extensively with a student – see Section 3 – and formally requests an accommodation on the student’s behalf or (2) more than one conflict not related to injury, illness or personal/family problems where I am contacted by the student very far in advance (e.g. an athlete who notifies me in September of conflicts with international competitions). In these limited situations, I will consider whether accommodations can still meet all course requirements or whether the student must be advised to drop the course and retake it when able to complete the required work. Any such extraordinary accommodations are at my discretion and may involve completing work at an alternate time, an oral and/or other assessment, re-weighting, and/or may be contingent on performance on other work.

If you do not miss any tests or DACM quizzes but one is relatively poor because of any kind of problem or challenge and if we are able to hold all of our term tests and final exam in person as planned, we will reweight to your other three term tests (increase the weight of each by 2.5 percentage points) and the final exam (increase the weight by 5 percentage points). However, if any do not occur in person, we will only increase the weights of those in person, which is only a partial reweighting, and how it is implemented is at my discretion. If all tests and the exam must happen online, then no reweighting is possible. For DACM, we will move the weight of the lowest quiz to the assignment if that helps your mark. Any questions around your academic integrity for any work disqualify you from these helpful reweighting opportunities.

17 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.

18 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>).

19 Accessibility, Absences and Help

If you require accommodation, remember to register with both Accessibility Services (at <https://studentlife.utoronto.ca/departments/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 Centre. 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.