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ECO375: APPLIED ECONOMETRICS, FALL 2020  
DEPT. OF ECONOMICS, UNIVERSITY OF TORONTO  
C.J. WARD, PHD

## 1. COURSE LOGISTICS:

**Course website:** <https://q.utoronto.ca/courses/182219>

**Course schedule:** There are two sections of ECO375 with scheduled meeting times of Thursdays 10am-12pm (section L0101/0901) and Thursdays 1pm-3pm (section L0102/0902). We have a common meeting time on Fridays 11am-1pm.<sup>1</sup> Each week there are asynchronous events (events that you “attend” at a time of your choosing) and synchronous events (events where we “meet” at a specific time). Weekly lectures are pre-recorded and thus allow for asynchronous attendance (provided the lecture is viewed in time to satisfy the weekly schedule). Office hours, Stata workshops, weekly tutorials, term tests and quizzes are all synchronous events, which will be offered during the timetable noted above. We assume all students are available at the times given in the university timetable.<sup>2</sup> For a full description of the weekly schedule, please see the section on Course Meetings.

**Communication:** Most points of communication for the course (tutorials, discussion hours, Piazza) go through the course website. Please see the section on course communication below for details on how to communicate with me, your fellow students, and the course staff.

**Prerequisites:** The Department checks whether students have the correct course prerequisites. Students will be removed if they do not have them. Please note that I cannot waive prerequisites. The prerequisites for ECO375 are as follows: ECO200Y1/ECO204Y1/ECO206Y1; ECO220Y1(70%)/ ECO227Y1/ (STA237H1(70%), STA238H1(70%))/ (STA247H1(70%), STA248H1(70%))/ (STA257H1, STA261H1).

## 2. COURSE DESCRIPTION

**Overview:** This course is an introduction to the statistical analysis of economic relationships. Students are expected to be familiar with calculus and statistics. The course has a dual focus on theoretical foundations and the application of empirical techniques to “real world” data. Econometric methods will be illustrated using the application of regressions to a wide variety of economic questions and data sources, including the use of statistical software. Some advanced topics in causal inference will also be discussed. By the conclusion of the course, you should have a solid theoretical and practical foundation for the interpretation and investigation of empirical evidence in economics.

**Textbook:** Introductory Econometrics: A Modern Approach, 7th Edition by Jeffrey M. Wooldridge

**Software:** The course involves a considerable amount of computing, and students must learn and use a sophisticated statistical software package. Stata is recommended and is the package supported by the instructor and TA’s throughout the course. Stata is normally available to you on

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<sup>1</sup> All times are in local Toronto time.

<sup>2</sup> We may be able to offer alternative tutorial time slots on Thursdays depending on TA availability and student demand, in which case you could choose to be available outside the course timetable.

campus at the computer lab. Over summer, StataCorp addressed the issue of campus closures by offering U of T students an option to download a copy of Stata to their own computer at no charge. We do not yet know whether this will extend into the fall semester, but updates will be posted on the MDL library website here: <https://mdl.library.utoronto.ca/technology/statistical-software>. A second option is to access library resources remotely (the instructions to do so are given here: <https://mdl.library.utoronto.ca/using-mdl-lab-computers-remote-desktop>). Aside from library access, Stata is (as always) available at reduced rates through the gradplan program, which allows U of T members to buy Stata software and manuals at low prices from StataCorp directly. The 6-month subscription to Stata/IC is sufficient for our needs in this course: <https://onesearch.library.utoronto.ca/ic/stata-gradplan-u-t>.

### 3. COURSE MEETINGS

The best way to keep up with weekly course components is to attend and complete each component in time with the pace of the course. The Thursday-Friday schedule will continue to anchor the course (as it would in “normal” times), which means you should reserve Thursdays and Fridays for ECO 375 meetings.

#### 3.1 TYPICAL WEEKLY SCHEDULE

**Monday to Wednesday:** The early part of the week (Monday-Wednesday) is reserved for lecture viewing, note taking, piazza discussion and lecture reflection. Lecture reflections are completed after viewing the weekly video(s) and are meant to help you reflect on the main points discussed. The reflections also help us root out early points of confusion, which we use to focus the discussion in the synchronous meetings at the end of the week. They are ungraded but count towards your participation grade. You must complete these by Wednesday by 2pm. A good strategy here is to define a specific time each week to do the lecture and reflection (e.g. Monday at 11pm or Tuesday at 9am, etc.) and carry through with that schedule for the rest of the semester.

**Thursday to Friday:** Small group tutorials will run on Thursday and provide a structured discussion of questions from the week’s lecture reflections, the piazza discussion board, and practice problems. The aim of the tutorials is to give you an opportunity to meet with fellow classmates, practice your developing econometric skills, and prepare you for the weekly quiz. The weekly quiz is scheduled on Friday at 11am. We will reserve the time directly following the weekly quiz for course discussion as needed, e.g., for STATA workshops or to touch base synchronously regarding the week’s topics.

**Keeping up a weekly practice:** It is important to keep up with course components on a weekly basis in time with the course schedule. This is particularly important in Econometrics as the content builds on itself, and your mastery of it depends heavily on spaced repetition. Our training schedule involves a weekly practice of study, application and reflection, which we then use as the basis for the next week’s training. There is a cadence here, where each week adds to last week’s progress, and we build our understanding by using our weekly training regime: study, apply, reflect. Just as you would not expect to run a successful marathon by leaving all training to the night before the race, you cannot expect success in this course by leaving all course work to the night before due dates.

Note that the above provides an example of a *typical* week, which will occur with modification around the scheduling of terms test due dates, writing assignments, and unforeseen and evolving events.

## 3.2 LECTURES AND TUTORIALS

**Lectures:** Lectures will be pre-recorded, and lecture videos and slides will be available in Quercus for you to view in advance of the Thursday-Friday meeting schedule. We will go through the lecture slides “together” via the lecture recording, and you will need to print the lecture slides and take notes ...or take notes referencing slide page numbers, or take notes electronically, etc. You get the idea: taking notes is important. You need to find a way to do it, and in the very least you will need paper and a pencil.

**Weekly tutorials:** Tutorials will take place on Thursdays and are available in multiple time slots in order to provide you an opportunity to interact in a small group setting. These tutorials (50 minutes) will be held online. They are synchronous and will not be recorded (see the section on Privacy below). You must sign up for a tutorial session on Quercus through People. Please sign up to a session that is during your registered section time slot (i.e. your registered section is either L0101/0901 or section L0102/0902). Based on TA availability, we will try to accommodate differing student demand across time slots, but where constraints bind, students registered in a session during a section time not their own may get bumped and will need to choose an alternative. Sign up for a tutorial as soon as possible; our first session is on September 17<sup>th</sup>. Tutorial groups will lock at 5pm on September 23, at which point you are locked to your group for the remaining weeks of the course. Therefore, when choosing your tutorial, please keep in mind your Thursday schedule throughout the entire semester. Also note that if we are able to offer a tutorial session outside the timetable and you choose to attend that session, you are agreeing to attend that specific session throughout the full semester (i.e. you can no longer plead to a course conflict during that time at any point during the course).

You are expected to regularly attend every week with your tutorial section and to participate. Your regular and active participation counts towards your participation mark. Participation includes answering any polls, contributing to the chat (via typing), answering questions verbally, and/or via other activities. Tutorial participation starts on September 17<sup>th</sup>.

## 4. CHECKLIST OF REQUIREMENTS FOR ONLINE DELIVERY

- Paper and a pencil (and probably an eraser, unless you’re the kind of person that never makes mistakes)
- Regular access to a reliable laptop and/or desktop with a working microphone and webcam
  - A phone and/or a tablet is NOT sufficient for this course
- The course textbook and Stata (or alternative statistical software). See Course Description section for details.
- A current installation of Office 365, available at no cost to current U of T students, via the page Office 365 ProPlus: [https://onesearch.library.utoronto.ca/ic-faq-categories/o\\_ce-365-proplus](https://onesearch.library.utoronto.ca/ic-faq-categories/o_ce-365-proplus)

- Regular access to reliable high-speed internet and reliable electricity
- Ability to correctly convert local Toronto time to your time zone: we will not accept confusion about deadlines (always given in local Toronto time) as an excuse for lateness or missed work
- Your TCard (your U of T Student ID card) ready
- The hardware, software, and knowledge to scan your work to be uploaded
  - Most phones can scan (a separate scanner is unnecessary) to create PDF, JPG, or PNG files
  - You must scan efficiently and without creating very large files: you may need to learn about your phone or scanner, install software/updates, and/or search for solutions online
- To be proactive to avoid technical and other difficulties, which includes submitting well before dead-lines, maintaining your devices, keeping software up to date, minimizing the strains on your internet bandwidth, learning how to scan efficiently, carefully reading all assessment instructions, and contacting your instructor/TAs immediately with any problems
  - Regularly follow our Quercus site for detailed guidance, updated as our situation evolves.

## 5. COURSE COVERAGE

Week	Topic	Reference
Week 1: Sep 7-11	Statistics Review	Appendix A,B,C
Week 2: Sep 14-18	Overview of Econometrics	Chapter 1
	Simple Regression	Chapter 2
Week 3: Sep 21-25	Multiple Regression Estimation	Chapter 3
Week 4: Sep 28-2	Multiple Regression Inference	Chapter 4
Week 5: Oct 5-9	Multiple Regression Additional Issues I	Chapter 5-7
Week 6: Oct 12-16	Multiple Regression Additional Issues II	Chapter 7-9
Week 7: Oct 19-23	Recap and Term Test 1	
Week 8: Oct 26-30	Instrumental Variable and 2SLS	Chapter 15
Week 9: Nov 2-6	Limited Dependent Variable Models	Chapter 17
Week 10: Nov 9-13	Reading Week	
Week 11: Nov 16-20	Panel Data Models	Chapter 13
Week 12: Nov 23-27	Panel Data Models Internal and External Validity (time permitting)	Chapter 14 Course Notes
Week 13: Nov 30-4	Recap and Term Test 2	

## 6. EVALUATION

There are four types of assessments in ECO375: 2 term tests, 2 writing assignments, weekly quizzes, and course participation. The overall course grade will be determined as follows:

Assessment	Weight	Due Date	Collaboration
Term Test 1	18	October 23	None
Writing Assignment 1	16	November 4	None
Term Test 2	18	December 4	None
Writing Assignment 2	20	December 16	None
Quizzes	18	Sept 25-Nov 20	None
Participation	10	Sept 17- Dec 3	N/A

**Collaboration:** There is absolutely no collaboration allowed on term test, assignments, or quizzes. Your submissions must be entirely your own work, and any collaboration for any portion is a serious infraction. Note that this means you may not post any material related to the assessment, discuss any of the assessment, or share any files related to the assessment for the duration of the assessment period. Remember also that all course materials, including quizzes, are copyright protected and you may not distribute them outside the course at any time.

Normally, students will be required to submit their course essays to Turnitin.com 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 Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site. The University of Toronto may adopt a replacement for Turnitin.com during our course. Be prepared for a possible switch.

**Participation:** Participation is multidimensional and reflects an overall assessment of your productive engagement in all aspects of our course. Your regular TA tutorial participation on Thursday is a significant component. Other opportunities also count for participation, such as the lecture reflections, surveys and/or other activities announced on Quercus. Piazza is not required for participation, but if you stand out by asking good questions and/or posting good answers we will take this positive information under advisement in assigning your participation mark. For activities counting for participation, we do not accept late submissions and no extensions are possible for any reason. Further, any negative participation may result in an overall mark of zero for participation. This would include, but is not limited to, any behaviors that run contrary to the expectations of this syllabus (e.g. seeming to engage in unreasonable collaboration, skipping work, etc.), failing to follow instructions, and any disruptive behaviors affecting your peers, TAs, and/or me. Participation is not intended as easy marks. You should not expect a participation mark of 80 or higher unless your participation is consistently excellent throughout our entire course. You will only learn your participation mark indirectly after the course is complete and your official course grade is on ACORN. Given your other known marks, you can deduce your participation mark. You cannot appeal your participation mark. Also,

anyone e-mailing us after the course is complete with the wish for a higher course grade can expect to be directed to this syllabus with no further reply.

**Writing Assignments:** The writing assignments allow substantial revision beyond what is possible during timed assessments, and it gives you an opportunity to test your skills in coding, data manipulation, statistical analysis, and interpretation of results. You may not collaborate. Detailed instructions and expectations will be posted on Quercus with each assignment. You have two weeks to complete the first and three weeks to complete the second, and you must submit online according to the instructions on Quercus. You must manage your time: you assume all risk of working on these in the final days before the deadline. We offer a small early bird bonus for submitting more than 24 hours before the deadline. There is a short grace period of 5 hours after the deadline but beyond that we do not accept late submissions (no exceptions). There are no make-ups and no extensions for ANY reason.

**Remark Requests:** Remark requests must: (1) Be submitted to Remark Request, which is an MS Form, (2) Explain WHY more points are justified, (3) Be submitted within TWO WEEKS of the work's return to the class. The entire submission may be remarked: your mark can go up, down, or remain unchanged. Requests are reviewed together after the two-week deadline, not immediately. We will not consider any remark requests after the deadline.

**Accommodations for Tutorials, Reflections, Quizzes, and Term Tests:** There is a very strict policy concerning a missed material, and any missed work earns an automatic mark of zero. This section explains special accommodations for: illness, injury, personal/family problems, enrolling after the course has begun, religious reasons, extracurricular conflicts, technology problems, internet or power outages, quarantine issues, accessibility concerns, and/or other challenging situations. For any issues that extend beyond our course, or last more than a week, you MUST contact your College Registrar immediately.

To accommodate students who cannot attend up to two weekly TA tutorials, we drop the two worst weeks in computing your participation mark. This also accommodates students who attend under difficult circumstances and/or miss part of a tutorial due to technology and/or other issues. To accommodate students who cannot complete up to two lecture reflections, we drop the two worst weeks in computing your participation mark. To accommodate students who cannot complete up to two of the weekly quizzes, we drop the two lowest quiz marks in computing your overall grade. This also accommodates students who submit in difficult circumstances, including encountering sporadic technology and/or other problems.

Missed term tests will receive a grade of a zero. In exceptional circumstances, we may grant an exemption for not more than one entirely missed term test. We determine whether an exemption will be granted; you need to complete ALL of the following steps to be considered.

1. Complete "Missed Term Test," which is an MS Form. It must be submitted AT LEAST FIVE HOURS BEFORE THE DUE TIME for the missed term test. For example, if the due time is 1pm on Friday, October 23rd, the LATEST you can request an accommodation is that morning: 8 am on Friday, October 23rd. It is unacceptable to fail to show up for an important engagement without advance notice. We do NOT wish to see any document completed by a doctor or other professional. All questions in the MS form are required.
2. Check your U of T e-mail. If an immediate resolution is possible, we may e-mail you quickly. Otherwise, within one week of the missed work you should receive an e-mail from

- us. Follow any instructions in it. Not seeing an e-mail from us is not an acceptable excuse for your failure to follow any time-sensitive or other instructions.
3. Complete a cumulative make-up to be scheduled by us. Your performance on both the make-up and other graded course work, as well your MS Form submission and correspondence, will be taken under advisement in determining your final course grade. We do not report marks for make-ups. However, after all regular course work is complete and returned, we will report the mark assigned for the original missed assessment.

Failing to complete all three steps above, regardless of the reason, results in a mark of zero on the original missed work. We do not accept late submissions and there are no make-ups for the make-up and no extensions for any reason. Accommodations for missing more work than addressed above are extremely limited: (1) an ongoing and substantial injury, illness, or personal/family problem seriously affecting the student's ability to complete term work across all courses over an extended period of time where the student's College Registrar writes to me after meeting with the student 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. 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.

## 7. COURSE COMMUNICATION

This is a challenging course, and you will likely have many questions throughout. We welcome these questions. In fact, we are banking on it.

We have designed our course with communication in mind (especially as the regular business of question-asking occurs with less ease in “these unprecedeted times”). To facilitate our collective discourse, we have organized the following as part of our semester: smaller weekly group meetings led by TAs (i.e. the tutorials), consultation time with the Stata TA, incentives for your participation (i.e. course credit), Piazza to facilitate class discussion throughout the week, and Friday discussion time for business arising. Your Eco 375 community is here for you: each week, all semester.

Maybe you want to kick it old-school and email us. Please note, however, that asking questions via e-mail is almost never the best way to get an answer. It leaves others out of valuable discussions and, more generally, requires a lot of repetitive effort for us; effort better put towards course improvement (pareto improvement, even). Instead, consider the avenues of communication listed below, and choose one that best fits your inquiry. If you somehow missed this section of the syllabus the first time around and email me about something of general interest to others or something that has a structured process already attached to it, please do not take offence if you receive a canned reply directing you back here.

1. Questions on course content (including the material covered in course assessments):
  - First, instead of using email, I encourage you to post your questions on Piazza. The Piazza system is highly catered to getting you help fast and efficiently and, importantly,

it builds an online community here in Eco 375. Piazza facilitates discussion primarily between you and your peers (there's more of you to populate the site), but our course TAs also check-in weekly to address any unresolved areas of confusion. They will also flag questions for me or the Stata TA where cases warrant. If you have any problems/feedback, email [team@piazza.com](mailto:team@piazza.com). Find our class signup link at: <https://piazza.com/utoronto.ca/fall2020/eco375h1flec0101>.

- A second way to address questions on course content is to write your question in your lecture reflection. I read these each week, and, where the point of confusion is shared by many, I will address these areas directly in the next lecture or discussion and flag it for coverage in the tutorials.
2. Questions about Stata specifically:
    - Some questions about Stata may not be sufficiently addressed in weekly tutorials or Friday discussion. In this case, post the question to Piazza or go to the Stata TA's office hours. Remember, we also have Stata workshops scheduled throughout the semester to walk you through the basic mechanics of Stata.
  3. Technological issues:
    - If you are having an issue with your technology, try posting to Piazza first as some others may share your issue and still more may have a potential solve for it. This also allows the course staff to become aware of it at the same time. Remember from Section 4 above; you should be proactive about avoiding technical and other difficulties, which includes learning to use the technology laid out in Section 4 ahead of “crunch” time.
  4. For remark requests on course assessments OR inquiries regarding a missed term test:
    - Please use the MS forms links on Quercus.

Most questions can be handled through points 1-4 above, but for those of a private nature, please reach out to me directly through email or office hours (e.g. for concerns about accessibility accommodations, TA issues, typos or broken links on the website). My email is courtney.ward@utoronto.ca. If you need to e-mail me, please (1) email from your UofT email address (it will be ignored as spam otherwise), (2) include “Eco375” in the subject line, and (3) include your student number in your signature. If I can answer briefly, I will reply within three business days. If you receive no reply please check the syllabus, review Quercus announcements, post to Piazza, see your TA in tutorials, or see me during office hours. My office hours Fridays 12-2pm. The first hour is for general class discussion, and the second hour is for private matters, which we can do via a breakout room online.

Lastly, please note that we will make important announcements through Quercus, which means you need to check in here regularly. You may also wish to customize your Quercus notification preferences to receive immediate notification of course messages.

## 8. ACADEMIC INTEGRITY

Please read/refamiliarize yourself with the Faculty Arts & Science's Statement on Academic Integrity at the start of our course: <https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity>. As part of an academic community it is your responsibility to be aware of appropriate conduct. Any academic offence will be reported and acted upon immediately.

## 9. STUDENT ACCESSIBILITY

For accessibility concerns *immediately* visit <http://www.studentlife.utoronto.ca/as> and also register with Accommodated Testing Services (ATS): <https://www.ace.utoronto.ca/ats/>. We can only provide accommodations for assessments as directed by ATS. If you have trouble, seek help right away from us, your College Registrar, and/or the Academic Success Centre. For any issues that extend beyond our course, or last more than a week, contact your College Registrar immediately.

## 10. PRIVACY

We are all expected to respect university privacy and copyright restrictions in this course.

**Synchronous events:** weekly synchronous events (where students participate) are not recorded for privacy reasons. The relevant policy states “Students may not create recordings of weekly synchronous events with the exception of those students requiring an accommodation for a disability, who should speak to the instructor prior to beginning to record these events.”

**Asynchronous events:** Course lectures will be recorded on video and will be available to students in the course for viewing remotely. The relevant policy states “Download and re-use is prohibited. Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor.”