UNIVERSITY OF TORONTO
ECO227Y1Y
Quantitative Methods in Economics
2018-2019 Academic Year
Lectures: Thursday, 2:00-4:00 pm, SS1071

Tutorials: Friday, 10:00-11:00 am, SS1071

Fall Session
Instructor: JoonHwan Cho
Office: Max Gluskin House, Room 080
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Office hours: Thursday, 12:30-1:30 pm (GE213)

Winter Session
Professor: Ismael Mourifié
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E-mail: ismael.mourifie@utoronto.ca
Office hours: TBA

Course Website: https://q.utoronto.ca (Quercus)

Course Description and Intended Learning Outcomes:

This is an introduction to probability and statistics intended for economic specialists. The course assumes basic familiarity with elementary calculus and will use it extensively. The course provides students with a demanding introduction to probability theory, estimation theory, sampling distributions, hypothesis testing, and simple regression analysis. By the end of the course, students should be familiar with the basic tools used to model uncertainty in economics and finance, to test hypotheses, and to estimate model parameters.

Prerequisites and Co-requisites:

ECO100Y is required with a minimum grade of 70%. Students are expected to have had an introductory undergraduate course in calculus. In particular, passing MAT133Y with a minimum grade of 63%; MAT123H and MAT124H each with minimum grades of 63%; MAT135Y with a minimum grade of 60%; MAT137Y with a minimum grade of 55%; or MAT157Y with a minimum grade of 55% will satisfy the calculus prerequisite for this course. It is also recommended that students be enrolled in second-year courses in linear algebra (i.e., MAT223H or MAT240H) and multivariate calculus (i.e., MAT235Y; MAT237Y; or ECO210H) at the same times as their enrolment in ECO227Y.

Textbook:

The lectures in this course are based on the material covered in Dennis D. Wackerly, William

Mendenhall III and Richard L. Scheaffer, *Mathematical Statistics with Applications*, 7th Edition (2008), Thomson Brooks / Cole, ISBN 978-0-495-11081-1. This textbook is available for purchase at the University of Toronto Bookstore. One another recommended book is *An Introduction to Mathematical Statistics and its Applications*, 5th Edition, Pearson, by R.J. Larsen and M.L. Marx.

Tutorials:
Tutorial TA: Thomas Kent Stringham (tom.stringham@mail.utoronto.ca)
Office hour: Wednesday, 9:30-10:30 am (GE213)
Each lecture will be followed by one-hour tutorial on Friday, 10:00-11:00 am, SS1085, during the Fall and the Winter. During the tutorial, Thomas will cover selected exercises from each week's problem set (end-of-the-chapter exercises from Wackerly et al.). The problem sets will be posted on Quercus in a real-time basis after each lecture. It is crucial for the students to independently work on the problem sets prior to the tutorials.

Tentative Course Schedule and Marking Scheme:

Fall 2018			
Date	**Week**	**Topic**	**Chapters**
Sept. 6	1	Introduction and Probability Theory I	2
Sept. 13	2	Probability Theory II	2
Sept. 20	3	Discrete Random Variables I	3
Sept. 27	4	Discrete Random Variables II	3
Oct. 4	5	Discrete Random Variables III	3
Oct. 11	**6**	**Term Test 1 (20%)**	-
Oct. 18	7	Continuous Random Variables I	4
Oct. 25	8	Continuous Random Variables II	4
Nov. 1	9	Continuous Random Variables III	4
Nov. 8	**-**	**Fall reading week (no class)**	-
Nov. 15	10	Multivariate Probability Distribution	5
Nov. 22	11	Bivariate Normal Distribution	5
Nov. 29	**12**	**Term Test 2 (20%)**	-

Winter 2019			
Date	**Week**	**Topic**	**Chapters**
Jan. 10	13	Function of Random Variables I	6
Jan. 17	14	Function of Random Variables II	6
Jan. 24	15	Sampling Distribution and Central Limit Theorem	1 & 7
Jan. 31	16	Estimation I	8
Feb. 7	17	Estimation II	8
Feb. 14	**18**	**Term Test 3 (20%)**	-
Feb. 21	**-**	**Winter reading week (no class)**	-
Feb. 28	19	Point Estimators I	9
Mar. 7	20	Point Estimators II	9
Mar. 14	21	Hypothesis Testing	10
Mar. 21	22	Regression I	11
Mar. 28	23	Regression II	11
Apr. 4	24	Bayesian Methods / Review	16
TBA		**Final Exam (35%)**	-

The final mark in this course will be computed as the sum of the marks from three term tests and a final exam (with weights as shown in the table above) **as well as a short writing assignment worth 5%** which will be assigned near the end of the academic year (in April).

Policies on Missed Tests:
A grade of zero will be given to students who do not write the test, unless an appropriate and convincing note is received within one week of the missed test (explaining why the test was missed).
- Make-up tests will only be scheduled based on legitimate medical reasons or acute emergencies.
- An e-mail notice must be sent to the appropriate instructor on the day of the test.
- Original legitimate supporting documents of absence are required (within one week). Scanned, copied, or e-mailed documents will not be accepted.
- When a student misses a test for medical reasons, the student shall provide an original copy of a fully completed University of Toronto official "Verification of Student Illness or Injury" form. The

certificate needs to be completed by a qualified medical doctor whose OHIP number must be provided. You can download the form from http://illnessverification.utoronto.ca.

- It is by the University policy that there are no "make-up tests" for "make-up tests".

Regrading of Term Tests:

Students can request regrading of their term tests by explaining the reason **in a written statement**. This request must be submitted to either the appropriate instructor or the TA within one week from the day in which the term tests are returned to the students. The whole test will be regraded to ensure consistency.

Problem Sets:

Problem sets will be given after every lecture. Although these problem sets will not be graded, their completion will be essential for students' success in this course.

E-mail Policy:

The instructors will reply to e-mails within 24 hours, except on weekends and holidays, with the following provision:

- The question should require a one- or two-sentence response (maximum). If it takes more, office hours are the more appropriate venue.
- Instructors will not reply to e-mails concerning grading. For such matters, office hours are more appropriate.
- It is also (strongly) preferable that students use the University of Toronto e-mail addresses since spam filter is set to maximum.
- Always identify yourself, course and section in your e-mail.
- Please do not send attachments of any kind.
- Please do not submit term work by e-mail.
- The TAs has one e-mail-hour per week to reply course-related questions, and the same e-mail policy holds for them.

Academic Misconduct:

Students should note that copying, plagiarising, or other forms of academic misconduct will not be tolerated. Any student caught engaging in such activities will be subject to academic discipline ranging from a mark of zero on the assignment, test or examination to dismissal from the university as outlined in the academic handbook. Any student abetting or otherwise assisting in such misconduct will also be subject to academic penalties.