

University of Waterloo
Department of Economics
ECON 221-001: Statistics for Economists
Fall 2014
Mon & Wed, 1:00 - 2:20 PM, PAS 1229

Instructor Information:

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Office Hours: Mondays, 2:30 - 4:00 PM &
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NOTE:

- Please use your University of Waterloo email account when sending emails to your instructor. "ECON 221 - 001" must appear in the subject line and the message must include your *full name* and *student ID number*.
- I will be available during office hours, or by appointment, to discuss course materials.
- If these office hours are not convenient for you, I am also available by arranging a *mutually convenient appointment* via e-mail.
- Office hours for the Final Exam Period will be announced in *mid-November*.

Economics Clinic: Fall term hours and locations to be announced in the website, <https://uwaterloo.ca/economics/current-undergraduates/undergraduate-study-clinic>

TA Information: To be announced later (TBA).

Where to find this course outline:

This course outline is available at two locations for the duration of the term:

- Department of Economics website, <https://uwaterloo.ca/economics/current-undergraduates/course-offerings>
- LEARN web site (requires UW user id and password), <https://learn.uwaterloo.ca>

Course Description:

This course introduces fundamental statistical methods commonly employed by economists. Topics include descriptive statistics, probability distributions, sampling, statistical estimation, hypothesis testing, regression analysis, and may also include computer applications using statistical software such as E-Views, and/ STATA.

Prerequisite:

ECON 101; ECON 211, or one of MATH 109, 116, 117, 118, 119, 128, 138, 148 and one of MATH 106,125,115,136,146. Not open to Math students.

Course Objectives and Learning Outcomes:

The objectives of this course are for students to understand statistical methods commonly used by economists; develop analytical and quantitative skills required to explain economic issues including statistical data. At the end of the course, students should be able to apply statistical techniques to analyze and communicate real world statistical data.

Required Textbook:

Paul Newbold, William L. Carlson, and Betty M. Thorne, **Statistics for Business and Economics**, 8th edition, (Toronto: Pearson Education Inc., 2013).

NOTE: The 7th edition is also permissible. One copy of the 8th edition is on *course reserve* in the Dana Porter Library.

Readings Available on LEARN:

- Course lecture slides and/ any additional course materials (news, updates, announcements, assignments and recommended solutions) will be posted on LEARN website, <https://learn.uwaterloo.ca> before each class (**3198, Fall 2014, ECON 221-001, Statistics for Economists**).
- Students are *strongly recommended* to attend lectures, read the required textbook chapters, solve assignments and practice problems individually as the lecture notes will be provided as a supplement to the required text book.
- The LEARN site is down occasionally. Save the course materials to your computer as soon as they are posted. Always be prepared!
- Students writing test and exams are responsible to save course materials on LEARN before the access to their courses is shut off (normally on the first day of classes of the next term).

Course Requirements and Assessment:

The course grade will be based on four assignments, one midterm exam and a final examination which will be held during the *Official Examination Schedule*. The format for midterm and the final exam will be a combination of multiple-choice questions, basic and application exercises.

The breakdown of assessment is as follows:

Assessment	Date of Evaluation	Weighting
Assignments (4 @ 5% each)	Assignment 1: Sep 24 / 14 Assignment 2: Oct 08 / 14 Assignment 3: Nov 5 / 14 Assignment 4: Nov 26 / 14	20%
Midterm Exam	Monday, October 20, (1:00-2:20) PM	30%
Final Exam (Comprehensive)	TBA (between Dec 4 & Dec 19 inclusive)	50%
Total		100%

This grading scheme will be implemented strictly for all students in the course (with the exception of verified illnesses – see below).

Assignments

There will be four (4) assignments for the course throughout the term. Each will count for 5% of the final grade. The assignments will be posted on LEARN as per above schedule. Two assignments will be due before the midterm exam and the rest will be due before the final exam. Due dates for the assignments will be announced when they are handed out in the class. Unless an arrangement has been made with the course instructor, **NO LATE ASSIGNMENTS WILL BE ACCEPTED**. Several assignments will require students to download data and then use the statistical software program Stata. Stata is available on the computers in the following Arts computing labs: PAS 1237, 1080 and 1098. If you plan on continuing in economics, you may find it worthwhile to buy a small

version of Stata through the course grad plan. The information is at <http://www.stata.com/order/new/edu/gradplans/>

Midterm Examination

- The midterm test will be written during regular class hours on Monday, October 20, from 1:00 pm to 2:20 pm. It will test students' proficiency with the material covered in the lectures, assignments and practice problem sets. The rooms assigned for the Midterm exams will be announced in class, and posted on LEARN. Midterm marks will be posted on LEARN and exam papers will be handed out in the class.
- There will be **NO MAKE UP FOR A MISSED MID-TERM EXAM**. If a valid documentation is provided for a missed mid-term, the weight will be shifted to the final exam. Please understand university policy and follow instructions in the web: <https://uwaterloo.ca/registrar/current-students/accommodation-due-to-illness>

Final Examination

- Final exam will be *comprehensive*; it will include all materials covered during the whole term. The final exam period for the Fall 2014 is from December 4 to December 19. Students are expected to be available during this time.
- Travel plans are not acceptable grounds for granting an alternative final examination time. Please read about examination regulations and related matters in the following webpage, <https://uwaterloo.ca/registrar/final-examinations/examination-regulations-and-related-matters>.
- The exact date and time for the final exam for this class will be determined by the Registrar's Office. See the following webpage for details, <https://uwaterloo.ca/registrar/final-examinations>. Please note that the Registrar's Office can only issue final grades.

Examination Policy:

Missing a Midterm Due to Illness During the Term

- Missing a midterm will automatically result in a grade of ZERO for that midterm. If the illness can be documented with a UW Verification of Illness Form (the only acceptable document), with approval you may transfer the weight of the missed midterm to the final exam. This remedy is a privilege and not a right.
- The midterm exam schedule has been set and will not be changed for whatever reason.

Missing the Final Exam Due to Illness

- Missing the final exam is a very serious matter which automatically results in a grade of ZERO for the final exam and possibly a failing grade for the course. Please carefully read the Economics Department policy on deferred final exams for instructions.
- No deferred final exam will be provided for students who missed all the exams (including the final exam) in this course.

Submission of Exam Papers

- Late submission of exam papers is not accepted and missed submissions will receive a zero mark for whatever reason.
- Exam papers must be submitted in whole and on time in the exam room. Exam papers
 - a) not submitted on time,
 - b) submitted with missing pages,
 - c) submitted elsewhere, with the exception of students with permission to write in the AS Office,
 - d) not received at allwill receive a grade of zero for whatever reason.
- It is the responsibility of students to ensure that they write exams in the location, date, and time assigned to their sections. Students writing exams in the wrong section are considered not writing exams at all and will receive a zero mark.

Tentative Class Schedule:

This class schedule is ambitious. Modifications and/or eliminations of certain content might be required given our limited time together. Any necessary modifications or eliminations to the course content will be communicated to you in the regular class period.

Date	Lecture #	Topic	Textbook Reading
Sep 08 / 14	1	Introduction to the Course & Describing data: Graphical	Ch. 1.1-3
Sep 10 / 14	2	Describing data: Graphical	Ch. 1.4-5
Sep 15 / 14	3	Describing data: Numerical	& Ch. 2.1
Sep 17 / 14	4	Probability: Definitions and Its Postulates	Ch. 2.2-4
Sep 22 / 14	5	Probability Rules	Ch. 3.1-2
Sep 24 / 14	6	Bivariate Probabilities & Bayes' Theorem	Ch. 3.3
Sep 29 / 14	7	<i>Assignment-1 handover in the class</i> Discrete Probability Distributions	Ch. 3.4-5
Oct 01 / 14	8	<i>Assignment-1 due in the class</i> Discrete Probability Distributions	Ch. 4.1-4
Oct 06 / 14	9	Continuous Probability Distributions	Ch. 4.5, 4.7
Oct 08 / 14	10	Continuous Probability Distributions	Ch. 5.1-2
		<i>Assignment-2 handover in the class</i> Sampling Distributions	Ch. 5.3, 5.5-6
		<i>October 13, 2014: Official Holiday for Thanksgiving Day</i> <i>Assignment-2 due in the class</i>	
Oct 15 / 14	11	Sampling Distributions & REVIEW for Midterm	Ch. 6.1-2
Midterm Examination: Monday, October 20, (1:00-2:20) PM			
Oct 22 / 14	12	Estimation: Properties of Point Estimators	Ch. 6.4
Oct 27 / 14	13	Estimation: Confidence Interval & sample size	Ch. 7.1-2
Oct 29 / 14	14	Hypothesis Testing: Concepts, P-value	Ch. 7.3, 7.5, 7.7
Nov 03 / 14	15	Hypothesis Testing: Power of a Test	Ch. 9.1-2
Nov 05 / 14	16	<i>Assignment-3 handover in the class</i> Hypothesis Testing: Additional Topics	Ch. 9.3, 9.5-6
Nov 10 / 14	17	<i>Assignment-3 due in the class</i> Simple Regression: Linear Regression Model	Ch. 10.1-2
Nov 12 / 14	18	Simple Regression: Least Square estimators	Ch. 11.1-2
Nov 17 / 14	19	Simple Regression: prediction, correlation and graphical analysis	Ch. 11.3-5
Nov 19 / 14	20	Multiple Regression: Estimation, explanatory power, confidence intervals, hypothesis tests	Ch. 11.6-7, 11.9
Nov 24 / 14	21	Multiple Regression: transformation for non-linear models, dummy variables	Ch. 12.1-4
Nov 26 / 14	22	<i>Assignment-4 handover in the class</i> Analysis of Variance (if time permits)	Ch. 12.5-9
Dec 01 / 14	23	<i>Assignment-4 due in the class</i> Time Series Analysis and Forecasting (if time permits) & REVIEW for Final	Ch. 15.1-2

Other Policies:

Electronic Device Policy:

- **THE CLASSROOM IS A HANDHELD-DEVICE-FREE ZONE.**
- Turn off all handheld devices and put them away for the duration of the lecture.
- Laptop computers may only be used to view lecture material.
- Photographic devices are not permitted in class due to copyright and privacy issues.
- Audio or video recording devices are not permitted in class due to copyright and privacy issues.

Attendance Policy:

Class attendance is an integral part of your educational experience. While attendance is not a graded component of this course, it is an important factor in ensuring your complete understanding of the material presented. You are responsible for all material presented in the scheduled lecture periods whether you choose to attend lectures or not.

Classroom Protocols:

- I do NOT lend my lecture notes to students for any reason.
- In order to maintain a learning environment in this classroom, I expect the highest level of courtesy and professional behaviour from every student. In particular, be punctual and turn off all audible ringers on all devices during class.
- As a courtesy to the custodial staff, if you have coffee, water, etc., please dispose of your garbage when you leave the classroom.
- No private conversations in class will be tolerated.

Institutional-required statements for undergraduate course outlines approved by Senate Undergraduate Council, April 14, 2009

Academic Integrity:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. See the [UWaterloo Academic Integrity Webpage \(https://uwaterloo.ca/academic-integrity/node/3\)](https://uwaterloo.ca/academic-integrity/node/3) and the Arts official webpage on ethical behaviour and plagiarism, (<https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour>) for more information.

Grievance:

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4 (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>). When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline:

A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline (<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>). For typical penalties check Guidelines for the Assessment of Penalties (<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/guidelines/guidelines-assessment-penalties>).

Appeals:

A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals (<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72>).

Accommodation for Students with Disabilities:***Note for students with disabilities***

The [Access Ability Services](#) (AS) Office, located in Needles Hall, First Floor, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS Office at the beginning of each academic term.

Good luck!!!