University of Waterloo

Economics 221 Statistics for Economists

Spring 2017: Section 1, 1:00 – 2:20 (PAS 2083)

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TA Information:
Tutorial Leader – Allison Mascella; email: `amascell@uwaterloo.ca`

Other TA information: TBA

Course Description

In this course we ask how we can use a sample of individuals to make well-reasoned claims about an unobserved population. We start by discussing ways of describing a population. We then learn how probability theory can be used to model uncertain events. Next we connect these two discussions and derive probability distributions of estimators of population characteristics. These distributions provide a basis for statistical inference about the population. The course introduces statistical modeling (single population, two population and simple regression) and presents least squares estimation in terms of projections of sample information on model vectors.

Course Goals and Learning Outcomes

Through lectures, readings, practice problems by hand, and analysis of data with statistical software, students will obtain:
- A basic literacy with regard to statistical techniques and data analysis using both MS Excel and Stata;
- Familiarity with the use of probability theory in modeling random events.

Required Text

Statistics for Business and Economics (8th edition) Paul Newbold, William Carson and Betty Thome

Additional Useful Text, especially Chapters 5, 8-12

David Freedman, Robert Pisani and Roger Purves. *Statistics*
4th edition, (W.W. Norton and Company, Inc).

LEARN

- I make heavy use of LEARN. This course outline including any revisions, and most importantly our updated schedule will be posted at LEARN. It is advisable to be in the habit of checking our revised schedule, particularly if you miss class.

- Other announcements, assignments, all data we will be using, assigned problems from the textbook will also be available at LEARN.

Course Requirements and Assessment

1.	Assignments (4)	Due Dates TBA	20% (5% each)
2.	Midterm 1	June 1st	20%
3.	Midterm 2	July 4th	20%
4.	Final	Scheduled by Registrar	40%

KEY NOTES:

- There are 4 formal assignments for the course. In addition to these, there will be weekly assigned problems (problems typically done by hand) from the text and from me.

- The format for both midterms and the final exam will be short answer questions with a small number of multiple choice questions for software examination. Midterm marks will be posted on LEARN. Only the Registrar's Office can issue final grades.

- Schedule and location of the final exam will be announced by the Registrar Office. Please visit http://registrar.uwaterloo.ca/exams/index.html for further details later in this term. Travel plans are NOT a sufficient reason to have a final exam deferred.

- Requests for accommodation based on religious holiday must be submitted to the Associate Dean.

- **Midterm II is not cumulative. The final exam is cumulative.**

- Combination of particular distribution and absolute measures will be used to determine the course grades. The university grading system will be relied on as benchmark.
- No programmable (graphing) calculator or electronic devices are allowed during the tests. You are required to have your student ID with you for all exams. Random checks may be made during exams.

Tentative Schedule   *(Check LEARN for Updates—this is <u>tentative</u>)*

The course is split into three sections

Class		Topic
	2-May	
	4-May	Dstats
	9-May	Dstats-Normal Model
	11-May	
	16-May	Normal Model
	18-May	Normal Model-Correlation
	23-May	Correlation-Regression
	25-May	Regression
	30-May	Randomness/Probability Intro
	1-Jun	MIDTERM 1
	6-Jun	Rules of Probability
	8-Jun	Rules of Probability
	13-Jun	Random Variables
	15-Jun	RVs - Probability Models-Geometric/Binomial
	20-Jun	Probability Models Cont.
	22-Jun	Sampling Distribution Models
	27-Jun	Confidence Intervals for a Proportion
	29-Jun	Hypothesis Testing for Proportions
	4-Jul	MIDTERM 2
	6-Jul	Inference for Means (Continuous Vars)
	11-Jul	Inference for Regression
	13-Jul	Case studies of Regression in Practice
	18-Jul	Case studies of Regression in Practice
	20-Jul	Multivariate Regression
	25-Jul	Final Exam Review

Policies

1. **Class Policies**

Examination Policy

Missing a Midterm Due to Illness During the Term

No make-up midterm is provided. 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.

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. Please see the policy below on deferred exams in the Department of Economics

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 all

will receive a grade of zero.

Important note: It is the responsibility of students to ensure that they write exams in the location, date, and time assigned to their section. Students writing exams in the wrong section will be assessed a **20%** penalty on the final exam grade. There will be no accommodation for possible differences in exam material or content.

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
The highest level of courtesy and professional behaviour are expected 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 ha e coffee, water, etc., please dispose of your garbage when you leave the classroom.

2. **Institutional-required statements for undergrauate course outlines approved by Senate Undergraduate Council, April 14, 2009**

Economics Department Deferred Final Exam Policy
Deferred Final Exam Policy found at https://uwaterloo.ca/economint-undergraduates/policies-and-resources/deferred-final-exam-policy.

Academic Integrity

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (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. When misconduct has been found to have occurred,   disciplinary penalties will be imposed under Policy 71 – Student Discipline. 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)

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 (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70), Section 4.

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read [Policy 72 - Student Appeals](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72).

Other sources of information for students:
[Academic Integrity website (Arts)](https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour)
https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour

[Academic Integrity Office (UWaterloo)](https://uwaterloo.ca/academic-integrity/) https://uwaterloo.ca/academic-integrity/

Accommodation for Students with Disabilities

Note for students with disabilities: The [AccessAbility Services](https://uwaterloo.ca/disability-services) office (https://uwaterloo.ca/disability-services), located on the first floor of the Needles Hall extension (NH 1401), 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.