University of Waterloo
Department of Economics
Econ 221 – Sections 1 and 2
Statistics for Economists
Fall 2021

Instructor Information

Instructor: Ryan George
Email: r22georg@uwaterloo.ca
Office hours: Wednesday 11-12:30pm; another time TBA (Learn Virtual Classroom)

Teaching Assistant and Tutorial leader: TBA

Emails must include "Econ 221" in the subject line of the message.

Territorial Acknowledgement

We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land granted to the Six Nations that includes six miles on each side of the Grand River.

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 some basic forms of statistical modeling (single population, two population, simple regression).

Course Goals and Learning Outcomes

Through lectures, reading and practice in solving problems by hand and spreadsheet calculations students will obtain:

- a basic literacy with regard to statistical techniques and data analysis;
- familiarity with the use of probability theory in modeling random events.

Required Text

Alexander Holmes, Barbara Illowsky, Susan Dean, *Introductory Business Statistics* Openstax, Rice University 2018. Available for reading online or pdf download
https://openstax.org/details/books/introductory-business-statistics

Readings Available on LEARN

- Announcements, lecture slides and videos, assignments and their solutions.

Course Requirements and Assessment

Assessment	Date of Evaluation	Weighting
Assignments (7)	Sept 24, Oct 1, Oct 8, Nov 5, Nov 19, Nov 26, Dec 7	35%
Midterm project	Oct 22	25%
Final project	Dec 20	40%
Total		100%

Assignments

There will be seven (7) assignments over the course of the term. Each will count for 5% of the final grade. The assignments will be posted on LEARN, and are to be submitted to the dropbox. Due dates are stated above and in the schedule below. Without a prior arrangement with the instructor, *no late assignments will be accepted*.

Midterm Project

The midterm project will assess students' command of the material in the first half of the course. It will count for 25% of the final mark. Students will type up their answers in a Word (.docx file) and submit Excel files or R code/results with associated calculations. Turnitin matching software will be used to ensure that written answers reflect individual student work (see more below).

Final Project

The midterm project will assess students' command of the material in the second half of the course, which builds on the material in the first part. It will count for 40% of the final mark. Students will type up their answers in a Word (.docx file) and submit Excel files or R code/results with associated calculations. Turnitin matching software will be used to ensure that written answers reflect individual student work (see more below).

Course Schedule

Week	Date	Topic	Reading Due
1	Sept 8-10	Describing a Population, Sampling and Statistics	Ch. 1 - 2
2	Sept 13-17	Introduction to Probability Theory	Ch. 3
Assn 1 due Friday Sept 24			
3	Sept 20-24	Discrete Random Variables	Ch. 4
Assn 2 due Friday Oct 1			
4	Sept 27-Oct 1	Continuous Random Variables	Ch. 5-6
Assn 3 due Friday Oct 8			
5	Oct 4 – Oct 8	Continuous Random Variables	Ch. 5-6
6	Oct 11-15	***No classes – Reading Week***	
Midterm Project due Friday Oct 22			
7	Oct 18-22	Sampling Distributions	Ch. 6 - 7
8	Oct 25-29	Confidence Interval Estimation	Ch. 8
Assn 4 due Friday Nov 5			
9	Nov 1 - 5	Introduction to Hypothesis Testing	Ch. 9
10	Nov 8-12	Further Approaches to Hypothesis Tests	Ch. 9 & 11
Assn 5 due Friday Nov 19			
11	Nov 15-19	Comparing Averages of Two Populations	Ch. 10
Assn 6 due Friday Nov 26			
12	Nov 22-26	Simple Regression	Ch. 13
Assn 7 due Tuesday Dec 7			
13	Nov 29-Dec 3	Simple Regression	Ch. 13
14	Dec 6-7	Simple Regression	Ch. 13
Final Project due Monday, Dec 20			

Teaching Assistant Support

Econ 221 Statistics for Economists has been offered with a tutorial component when delivered on campus. The TA assigned to the course will be responsible for uploading short videos demonstrating the solution of illustrative problems that would otherwise have been presented in tutorial. The TA will also curate a discussion thread where students can ask questions about tutorial material. They will offer additional short videos to address frequently raised concerns.

Missed Work and Accommodation Regarding Assessment

If a student is unable to submit a course assignment for documented reasons, the student's mark will be based upon an adjusted weighting scheme.

Penalties and Rules Regarding Late Work

Assignments must be submitted on time. No late submissions will be accepted unless an arrangement has been made in advance with the instructor. Midterm and Final projects that are submitted late will be penalized with a 5% grade reduction per day.

Cross-listed course

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

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. See the UWaterloo Academic Integrity webpage for more information.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. Check the Office of Academic Integrity for more information. 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. For typical penalties check Guidelines for the Assessment of Penalties.

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. When in doubt,

please be certain to contact the department's administrative assistant who will provide further assistance.

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.

Accommodation for Students with Disabilities

Note for students with disabilities: The AccessAbility Services office, located on the first floor of the Needles Hall extension (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.

Turnitin.com and alternatives: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server. Students that are concerned about their privacy and/or security may arrange with instructor an alternative (e.g., scaffolded assignment or annotated bibliography). Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit the alternate assignment.

Mental Health Support

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.

On Campus

- Counselling Services: counselling.services@uwaterloo.ca / 519-888-4567 ext. 32655
- MATES: one-to-one peer support program offered by Federation of Students (FEDS) and Counselling Services
- Health Services Emergency service: located across the creek form Student Life Centre

Off campus, 24/7

- Good2Talk: Free confidential help line for post-secondary students. Phone: 1-866-925-5454

- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300 ext. 6880
- Here 24/7: Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- OK2BME: set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online on the Faculty of Arts website
Download UWaterloo and regional mental health resources (PDF)

Download the WatSafe app to your phone to quickly access mental health support information