University of Waterloo  
Department of Economics  
Econ 221 – Section 1  
Statistics for Economists  
Winter 2019  
Monday, Wednesday and Friday, 8:30-9:20 am RCH 207

Instructor Information
Instructor: Ryan George
Office: HH 218
Office Phone: 519-888-4567 ext. 33169 (please do not leave voice mails)
Office Hours: scheduled,
    Monday    10 – 11am,        Tuesday    11am – 12 noon,
    Wednesday 10 – 11am,        Thursday  11am – 12 noon
    or by appointment.
Email: r22georg@uwaterloo.ca

The instructor will only respond to emails that 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 promised 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


One copy of the 8th edition is on reserve in the Dana Porter Library.

Readings Available on LEARN

- Announcements, lecture summaries, assignments and their solutions, midterm solutions.

- Recommended textbook problems with solutions.

Course Requirements and Assessment

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Date of Evaluation (if known)</th>
<th>Weighting (higher grade from two schemes will be used)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Scheme #1</td>
</tr>
<tr>
<td>Assignments (3 @ 5% each)</td>
<td>TBA</td>
<td>15%</td>
</tr>
<tr>
<td>Tutorial Participation</td>
<td>weekly</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm 1</td>
<td>February 6</td>
<td>20%</td>
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<tr>
<td>Midterm 2</td>
<td>March 13</td>
<td>20%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>Exam Period</td>
<td>35%</td>
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<tr>
<td>Total</td>
<td></td>
<td>100%</td>
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Tutorial Participation

Students are required to attend 11 tutorial meetings over the course of the term. Exercises will be given and reviewed. Students will be given problems to solve and submit and these will be graded (1 attended tutorial, 2 used correct approach, 3 solved problem out of 3). The best 8 out of 11 tutorial performances will be used to calculate the tutorial participation mark. No tutorial will be held on February 22nd (week of Study Break) or April 5th (last day of classes).
Assignments
There will be three assignments over the course of the term. Each will count for 5% of the final grade. The assignments will be posted on LEARN, and due in class. Due dates to be announced. Without a prior arrangement with the instructor, no late assignments will be accepted.

Midterm Examination
The midterm exams will be held in class on Wednesday, February 6th and Wednesday, March 13th. They will test students’ proficiency with the material covered in the lectures, assignments and practice problems.

Final Examination
The final exam is comprehensive. The date will be set by the Registrar’s Office.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Readings Due</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 7, 9 and 11</td>
<td>1. Describing a Population, Sampling and Statistics&lt;br&gt;2. Basic Set Theory</td>
<td>NCT 1.1-3,5; 2.1,2,4;&lt;br&gt;NCT 3.1</td>
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<td></td>
<td></td>
<td>3. Introduction to Probability Theory&lt;br&gt;4. Conditional Probabilities</td>
<td>NCT 3.2-3&lt;br&gt;NCT 3.3-5</td>
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<tr>
<td>2</td>
<td>Jan 14, 16 and 18</td>
<td>5. Discrete Random Variables I</td>
<td>NCT 4.1-3</td>
</tr>
<tr>
<td>3</td>
<td>Jan 21, 23 and 25</td>
<td>6. Discrete Random Variables II</td>
<td>NCT 4.4,5,7</td>
</tr>
<tr>
<td>4</td>
<td>Jan 28 and 30, Feb 1</td>
<td><em>Wrap-up and Review</em>&lt;br&gt;&lt;b&gt;Midterm 1 (Feb 6th)&lt;/b&gt;</td>
<td>NCT 5.1-3,5</td>
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<tr>
<td>5</td>
<td>Feb 11, 13 and 15</td>
<td>7. Continuous Random Variables I</td>
<td></td>
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<td>6</td>
<td>Feb 18, 20 and 22</td>
<td>No classes, No tutorial – Study Break</td>
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<tr>
<td>10</td>
<td>March 11 and 13 and 15</td>
<td><em>Wrap-up and Review</em>&lt;br&gt;&lt;b&gt;Midterm 2 (March 13)&lt;/b&gt;</td>
<td>NCT 9.1-2, 5</td>
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<td>13</td>
<td>April 1, 3 and 5</td>
<td>16. Simple Regression – Prediction, Graphical Analysis&lt;br&gt;<em>Wrap-up and Final Exam Details</em>&lt;br&gt;*No tutorial April 5th *</td>
<td>NCT 11.5-6, 11.9</td>
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Missed Work and Accommodation Regarding Assessment
If a student is unable to take a midterm exam for documented reasons, the student’s mark will be based upon one midterm mark with the balance of the weight shifted to the final exam. If a second midterm is missed for a documented reason, a make-up midterm must be taken.

Please note that students who decide to take an exam cannot be given accommodation after the fact due to illness or personal complicating factors that may have affected their performance. If you are not well on the day of an exam it is advisable that you not take the exam and obtain valid documentation of the circumstances of this decision.

Electronic Device Policy
To avoid disruptions to the learning environment handheld devices must be turned off during the lecture and laptops must be used strictly for lecture-related purposes. If a student’s use of a laptop becomes a distraction for adjacent students that student will be asked to discontinue its use.

Attendance Policy
Lectures are an important component of the learning process and should be attended regularly.

Economics Department Deferred Final Exam Policy
Deferred Final Exam Policy is detailed on the department website in the ‘Resources and Policies’ section of the Undergraduate program page. The web address is

https://uwaterloo.ca/economics/undergraduate/resources-and-policies/deferred-final-exam-policy

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.

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