

University of Waterloo
GBDA 205, Section 002
Quantitative Methods
Winter 2017
Course Outline

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Lecture Hours & Location:

- Section 001: 7:00- 9:50pm, Mondays, RCH308
- Section 002: 7:00- 9:50pm, Wednesdays, RCH306

Office Hours and Office Location: PAS 1049, 1:00 to 2:00 on Mondays and 4:00 to 5:00 on Wednesdays (Other times by appointments only)

Course Description:

This course is designed as an introduction to quantitative data analysis, covering basic descriptive and inferential statistical techniques used in analyzing social science research data. Students are not expected to be math wizards, but rather will be walked through the basics of quantitative methods with the goal of becoming effective data analysts. As such, emphasis in this course will be placed on the logic of quantitative methods rather than the math behind the statistics.

The learning objectives of this course would be that students:

- understand which test is appropriate to answer a particular research question
- are able to identify the assumptions and limits of statistical tests
- become more familiar with ways to organize and analyze data
- are able to communicate research results and translate statistical jargons into meaningful English

The topics covered in this course can be found in the later section of class schedule.

Email

I may not always have access to voicemail. As such, email is a preferred way to reach me. I will try my best to respond as soon as I can. Please include “GBDA 205” and your section # of “001” or “002” in the subject line.

Attendance Policy

All class assessment items will be based on the class lectures. Therefore, attending classes and taking good notes is very important. Students are expected to attend all scheduled classes in the term to keep up with course material. This is especially important as the material builds each week. Attendance is based on class participation measured via clickers and lab exercises in class. Please see the policy on clickers in the later sections of “Clicker Questions” and “Lab Exercises”.

Textbook

Roberts, L.W., Edgerton, J., Peter, T., & Wilkinson, L. (2015), *Understanding Social Statistics*, Oxford University Press, ISBN-13: 9780195444292

The lectures will roughly follow the textbook, but often will not cover every chapter. Conversely, lectures sometimes will go beyond what is covered in the text. Class notes and additional readings (if applicable) will be posted on LEARN periodically.

Resources

All supplementary course materials (lecture slides/notes, assignments, announcements, etc.) will be posted on LEARN, <http://learn.uwaterloo.ca>

Statistic Software

We will use SPSS as the statistic software for this class. Students are expected to use SPSS both during the lab time in class and practice the statistical techniques on their own time.

Due to the limited resources, we will not be able to have access to computer labs installed with SPSS. As a result, students of GBDA 205 are granted access to SPSS as a virtual application for the Winter 2017 term. You will be able to access SPSS remotely from your own computers. For instruction on how to access SPSS remotely, please go to:

<https://uwaterloo.ca/arts-computing/students/remote-access-software>

You may also use computer labs equipped with SPSS software out of class time, which are located in PAS 1080, PAS 1098, PAS 1099 and PAS 1237.

Electronic Device Policy

Cell phones, pagers, and other electronic devices must be either turned off or muted during classes. Laptops are permitted in class for note-taking and in-class activities only. Devices must be closed, disabled, and/or set aside when requested by the instructor. Students who do not comply with the electronic device policy may be asked to leave a class. Students who have made arrangements through the Office for Students with Disabilities may use electronic devices as an academic accommodation related to their disability.

Grading

Category	Weight	Date	Note
Clicker questions	10%		
Lab exercises	10%		
Three Online Assignments	15% (5% each)	Respectively, Jan 22, Mar 5 and Apr 2.	Submitted by the end of the day on LEARN
Two online quizzes	30% (15% each)	Respectively, Feb 3 and Mar 10	On LEARN with one hour time limit
Final Exam (Comprehensive)	35%	Scheduled by the Registrar	

Clicker Questions

This course will be using the i>clicker student response system in class. i>clicker helps me to understand whether you have grasped the concepts and adjust class progress accordingly and also gives everyone a chance to participate in class.

i. Why are clickers used in this course?

Quote from Wood's paper *Clickers: A Teaching Gimmick that Works*, describes advantages of using clickers in a large class for both students and instructors.

“For the students:

- They are answering anonymously - no one has to worry about the possible humiliation of giving a "dumb" answer.*
- Those who did not "get it" realize they are not the only ones. In a typical lecture situation, such students are often inhibited from asking a question by the belief "everyone but me probably understood."*
- Those who apparently did not "get it" often find out the reason was not their lack of knowledge, but an unclear or ambiguous question from the instructor.*
- Most important, the students are actively engaged with the topic at hand and, therefore, more likely to understand and retain it better than if they were only sitting passively and listening to the instructor.*

For the instructor:

- S/he can later find out from the software which students are present and give credit, if desired, for in-class participation.*

- *S/he knows immediately, in real time, what fraction of the students didn't "get it," information that often does not become apparent in a standard lecture course until after the next exam, when it's too late to do much about it".*

ii. Registration of your i>clicker

Students are responsible for buying a clicker (first generation clickers or the new version of clickers both work), bringing it to every class and ensuring that the batteries work.

You must register your i>clicker in order to receive participation credit. I cannot match your answers to your name unless you register your i>clicker to your name using UW internal registration link

Below is an instruction of how to register your i>clicker from UW's i<clicker FAQ page.

"To register your clicker in your LEARN course. You will find a link to the clicker registration page somewhere on the Content tab within the LEARN/D2L course.

Follow the instructions on this registration page to enter your clicker ID number (located on the back of the clicker) into the answer box.

If you replace your clicker then register the new clicker ID number in the same manner as above.

*The clicker ID number is printed on the back of the clicker near the bottom, sometimes in very small type. An example is 12873CAB. Other numbers on the back like T24-RLR13 or 6495A-RLR13 are **not** clicker IDs. Clicker ID numbers sometimes use the numeral 0 (zero) or 1 (one), but never use the capital letter O (Oh) or lowercase letter l (el). Ask a fellow student or your instructor if you can't locate the clicker ID"*

Registration is only needed once. A single registration will work for all your clicker courses and all terms. Your registration on official clicker webpage is **NOT** going to work for our purposes. Please use the UW internal registration listed above for registering your i>clicker. FAQ for students about clickers can be found on the following link: <http://www.math.uwaterloo.ca/~pkates/CTE/clickers/clicker-student-faq.html#faq-register-what>

There are two sections of GBDA 205. **However, students need to go to the section that he/she registers.** I<clicker responses will not be counted if a student goes to the wrong section as the receiver cannot link the signal received with the correct student name/ID.

iii. Grading Policy

Class participation will begin in the **third week of classes** (Week of January 16 to 20). The clicker grade considers both response rate (i.e., how many questions you have answered out of total questions asked) and performance (i.e., how many questions you have answered CORRECTLY out of total questions).

i>clicker grade will account for 10% of your overall grade for this course. To receive a full mark for the clicker grade, you will need to answer at least 75% of total questions asked (participation portion) and 50% of total questions correctly (performance portion). As these percentages (75% and 50%) already take into consideration of special situations (e.g., sick days or other conflicts and times you forget to bring your clicker to class), being sick will not exempt you or shift the weight of clicker grade for that day.

The following is a hypothetical example on how this grade is calculated.

Example:

Likely there will be 9 to 10 sessions overall with clicker questions through the semester and between 3 to 6 questions for each session. Assume there are 50 clicker questions in total and you miss 2 sessions or 8 clicker questions (due to absence under various reasons) i.e., answering 42 clicker questions. Also assume out of the 42 questions, you answer 28 questions correctly. According to this, the percentage of response is 84% ($=42/50$) and accuracy is 56% ($=28/50$). As such, both the response percentage and accuracy are higher than the 75% and 50%, respectively. You receive a full mark for the 10% participation grade.

The clicker grade will be updated twice on LEARN throughout the semester, one during the term and one at the end of the semester. Students are responsible for checking their clicker grade once posted and notifying the lecturer of any potential issues in a timely manner.

iv. Cheating

I consider bringing a fellow student's i>clicker to class to be cheating and a violation of the ***Academic Integrity***. If you are caught with a remote other than your own or have votes in a class that you did not attend, you will forfeit all clicker points and may face additional disciplinary action.

Lab Exercises

During some classes, certain time will be designated as lab exercise time. During these time periods, the instructor will assign some SPSS problems for students to practice and solve with their own laptops. The class will be notified to bring the laptops to class by email the day prior to the class. Failing to bring the laptop would result in zero grade for that particular lab session.

In total we will likely have six lab sessions and four of these will be counted towards your grade of lab exercises. The total # of lab sessions may change due to the change of class schedule. In this case, the # of sessions dropped will be adjusted accordingly as well. There is no late or deferred submission of the lab exercises. As two of the lab sessions will be dropped, this takes into consideration of sick days. Being sick will not exempt you or shift the weight of lab exercise grade for that day.

Online Assignments

Your grade is based on your performance in learning fundamental statistics knowledge and applying them to solve problems. Three problem sets will be assigned. Each will be posted around one week prior to the due date on LEARN. Feel free to work in groups as problem sets are supposed to be learning experiences. However, each student must submit their own assignments online. Copying other students' answers without understanding the material, your exam performance will suffer.

No late assignments will be accepted. As you will have one week to finish each assignment, being sick for certain period during the week is not an excuse for missing the deadline, unless under special circumstances.

Online Quizzes

Quiz questions test your knowledge of concepts and ability to work through exercises. Unlike assignments, you are supposed to finish the quiz individually. Assignments are opportunities for you to **learn and practice** with discussion and help with peers, while quizzes are opportunities to **test** your grasp of knowledge learned through lectures, assignments, self-practices etc. As such, there is **ONE-hour time limit** in finishing and submitting the online quiz on the quiz day. The time when the quizzes will be open during the day will be announced in class by the instructor after consulting with the class on potential conflicts.

There are **no deferred or make-up quizzes**. If you miss the quiz due to illness and have a valid medical documentation, the weight of the quiz will be shifted to the final exam. Otherwise, a mark of zero will be given to the missed quiz.

Final

The final exam is cumulative and will be scheduled by Registrar's office. If a student is sick on the exam day, deferral of final examination is **NOT** automatic upon the presentation of suitable medical verification. The instructor will use this documentation together with other information to determine whether accommodation is warranted.

According to Registrar's Office [Accommodation Due to Illness policy](#)

"If a student is granted an accommodation to postpone a final examination, they shall write the exam the next time the course is taught or during the next term the student is on campus, whichever is sooner".

Extra credits might be given in class without notice. The number of extra credits and whether extra credits will be given depend on class progress and average performance in midterms.

Tentative Course Outline

*The final delivery of the topics and time below may change due to class ability and interest in the lecture materials.

# of week	Week of	Class Date	Topic Categories	Topic	Chapters from the textbook	Midterm and Assignments during the week
1	Jan 2 to Jan 6	Jan 4 (W)	Introduction	Syllabus; Introduction	Chapter 1, 2 and 3	
2	Jan 9 to Jan 13	Jan 11 (W)	Univariate Analysis	Introduction to univariate Analysis; Measures of Central Tendency	Chapter 4 and 5	
3	Jan 16 to Jan 20	Jan 18 (W)		Measures of Dispersion; Charts and Graphs; the Normal Curve	Chapter 6, 7 and 8	Online Assignment 1 due by the end of Jan 22.
4	Jan 23 to Jan 27	Jan 25 (W)		Bivariate Analysis	Understanding Relationships and Bivariate Tables	Chapter 9 and 10
5	Jan 30 to Feb 3	Feb 1 (W)	Scatterplot Analysis; Proportional Reduction in Error Statistics		Chapter 11 and 12	Online Quiz 1 (one hour time limit) on Friday, Feb 3
6	Feb 6 to Feb 10	Feb 8 (W)	Statistics for Categorical Relationships and Statistics for Continuous Connections		Chapter 13 and 14	
7	Feb 13 to Feb 17	Feb 15 (W)	Multivariate Analysis	Taking Additional Variables into Account; the Elaboration Model	Chapter 15 and 16	
8	Feb 20 to Feb 24	Feb 22 (W)		Study week, No class		
9	Feb 27 to Mar 3	Feb 27 (M)		Multiple Regression	Chapter 17	Online Assignment 2 due by the end of Mar 5; Wednesday class is rescheduled to Feb 27 (Monday), a combined session with the other Section of 205 due to Wednesday class's conflict with your CS midterm.
10	Mar 6 to Mar 10	Mar 8 (W)	Sampling and Inference	Samples and Population	Chapter 18	Online Quiz 2 (one hour time limit) on Friday, Mar 10
11	Mar 13 to Mar 17	Mar 15 (W)		Point Estimates, Confidence Intervals and Confidence Levels	Chapter 19	
12	Mar 20 to Mar 24	Mar 22 (W)		Hypothesis Testing	Chapter 20	
13	Mar 27 to Mar 31	Mar 29 (W)		Various Significance Tests	Chapter 21	Online Assignment 3 due by the end of April 2

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 are expected to promote honesty, trust, fairness, respect and responsibility. See the [UWaterloo Academic Integrity webpage](#) and the [Arts 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. 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](#).

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.

Other sources of information for students:

[Academic Integrity website \(Arts\)](#)

<https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour>

[Academic Integrity Office \(UWaterloo\)](#)

<https://uwaterloo.ca/academic-integrity/>