University of Waterloo
GBDA 205 Quantitative Methods
Winter 2018
Course Outline

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Lecture Hours & Location:
- Section 001: 2:30- 3:50pm, Mondays and Wednesdays, RCH305
- Section 002: 4:00- 5:20pm, Mondays and Wednesdays, RCH305

Office Hours and Office Location: PAS 1049,11:30am to 1:00pm on Mondays and by appointments

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:
- are able to identify the assumptions and limits of statistical tests
- become more familiar with ways to organize and analyze data
- understand which test is appropriate to answer a particular research question
- use a common statistical software, SPSS, to perform statistical analysis
- 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 *Tentative 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 class lectures. Therefore, attending classes and taking good notes are 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 taken each class and also reflected in the in-class clicker questions.

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. Please refer to *Online Assignments and SPSS Exercises* section in this syllabus.

To access SPSS, you have two options. The first is using computer labs equipped with SPSS software out of class time, which are located in PAS 1080, PAS 1098, PAS 1099 and PAS 1237.

The second option is by accessing SPSS remotely. Due to the limited resources, in class time 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 2018 term. You will be able to access SPSS remotely from your own computers or on campus computer labs that are not equipped with SPSS. For instruction on how to access SPSS remotely, please go to: https://uwaterloo.ca/arts-computing/students/remote-access-software

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%	In class	
SPSS exercises	17.5%	Please see the tentative lecture schedule.	Submitted by the end of the day on LEARN
Online Assignments	17.5%	Please see the tentative lecture schedule.	Submitted by the end of the day on LEARN
Midterm	20%	Feb 14 (W) in Class	In Class
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:*
o *They are answering anonymously - no one has to worry about the possible humiliation of giving a "dumb" answer.*
o *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."*
o *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.*

o *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:
o *S/he can later find out from the software which students are present and give credit, if desired, for in-class participation.*
o *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 (**under Syllabus folder**) 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 14 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 18 to19 sessions overall with clicker questions through the semester and between 2 to 5 questions for each session. Assume there are 60 clicker questions in total and you miss 3 sessions or 10 clicker

questions (due to absence under various reasons) i.e., answering 50 clicker questions. Also assume out of the 50 questions, you answer 36 questions correctly. According to this, the percentage of response is 83% (=50/60) and accuracy is 60% (=36/60). 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.

Online Assignments and SPSS Exercises
Your grade is based on your performance in learning fundamental statistics knowledge and applying them to solve problems. It is important to understand statistical techniques, and equally critical to learn at least one computer statistical software to perform the analysis as real-word data sometimes is too large to analyze or calculate manually. IBM® SPSS® Statistics Software is a common statistical analysis software package that we will be using in this course.

Through the term, around four online assignments and eight SPSS exercises will be assigned. Each will be posted by the Wednesdays in the week of due date on LEARN. Feel free to work in groups as they are supposed to be learning experiences. However, each student must submit their own assignments/SPSS exercises online. Copying other students' answers without understanding the material, your exam performance will suffer.

No late assignments/SPSS exercises will be accepted. As you will multiple days to finish, being sick is not an excuse for missing the deadline, unless under special circumstances, subject to the instructor's judgement.

Midterm and Final
The midterm is in class and takes the full lecture session, i.e., one hour and 20 minutes. There is **no deferred or make-up mid-term**. If you miss the midterm due to illness and have a valid medical documentation, the weight of the midterm will be shifted to the final exam. Otherwise, a mark of zero will be given to the missed midterm.

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 Class Schedule

*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	Quizzes and Assignments during the week; Notes
1	Jan 1 to Jan 6	Jan 3 (W)	Introduction	Syllabus; Introduction	Chapter 1, 2 and 3	
2	Jan 7 to Jan 13	Jan 8 (M)	Univariate Analysis	Review: Introduction to univariate Analysis; Measures of Central Tendancy; Measures of Disperson; and Charts and Graphs	Chapter 4, 5, 6 and 7	
		Jan 10 (W)				
3	Jan 14 to Jan 20	Jan 15 (M)		The Normal Curve	Chapter 8	**Online SPSS exercise 1** Due by the end of Sunday (Jan 21)
		Jan 17 (W)				
4	Jan 21 to Jan 27	Jan 22 (M)	Bivariate Analysis	Understanding Relationships; Bivariate Tables; and Scatterplot Analysis	Chapter 9, 10 and 11	**Online SPSS exercise 2 and Homework 1** Due by the end of Sunday (Jan 28)
		Jan 24 (W)				
5	Jan 28 to Feb 3	Jan 29 (M)	Data	Initial Analysis of data: distribution, bias etc.	Class Lecture Notes/Slides	**Online SPSS exercise 3** Due by the end of Sunday (Feb 4)
		Jan 31 (W)				
6	Feb 4 to Feb 10	Feb 5 (M)		Categorical data analysis	Chapter 13 and Class Lecture	**Online SPSS exercise 4 and Homework 2** Due by the end of Sunday (Feb 11)
		Feb 7 (W)				
7	Feb 11 to Feb 17	Feb 12 (M)		Catch-up and review of Mid-term		
		Feb 14 (W)	**Mid-term**			
8	Feb 18 to Feb 24	Feb 19 (M)	Study week, No class			
		Feb 21 (W)				
9	Feb 25 to Mar 3	Feb 26 (M)	Non-Parametric Models	What is non-parametric tests and when and how we should use them.	Class Lecture Notes/Slides	
		Feb 28 (W)				
10	Mar 4 to Mar10	Mar 5 (M)	Regression	Regression analysis	Chapter 14 and 17	**Online SPSS exercise 5** Due by the end of Sunday (March 11)
		Mar 7 (W)				
11	Mar 11 to Mar 17	Mar 12 (M)	Sampling and Inference	Samples and Poplulation, Point Estimates, Confidence Intervals and Confidence Levels	Chapter 18 and 19	**Online SPSS exercise 6 and Homework 3** Due by the end of Sunday March 18)
		Mar 14 (W)				
12	Mar 18 to Mar 24	Mar 19 (M)		Hypotehsis Testing	Chapter 20	**Online SPSS exercise 7** Due by the end of Sunday (Mar 25)
		Mar 21 (W)				
13	Mar 25 to Mar 31	Mar 26 (M)		Various Significance Tests	Chapter 21	**Online SPSS exercise 8** Due by the end of Sunday (April 1)
		Mar 28 (W)				
14	April 1 to April 7	April 2 (M)		Last Class: Catch-up, Final review		**Online Homework 4** Due by the end of Sunday (April 8)
		April 4 (W)	**NO Class** (Make-up day for Friday schedule)			

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/