University of Waterloo
Global Business and Digital Arts
Winter 2016

GBDA 205 (001) Quantitative Methods
Monday 8:30-9:50 HH 334
Wednesday 10:30-11:50 RCH 308

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Course Description

This course is designed as an introduction to quantitative data analysis. Quantitative methods and statistical analysis can be intimidating, but this course will follow a progressive structure such that the information builds throughout the weeks of the course. 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.

This course is guided by the philosophy that students won't necessarily end up being statisticians, but should be competent and confident consumers of research. This course will allow students to understand which test is appropriate to answer a particular research question, the assumptions and limits of statistical tests, and how to interpret the results. Beginning with univariate analysis, students will work up to considering more than one variable through multivariate analyses.

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. Students are also expected to practice the statistical techniques on their own time. Computer labs equipped with SPSS software are located in PAS 1237 (open 8:30-4:30 on weekdays unless booked for a class) and PAS 1098 (open all the time).

Course Goals and Learning Outcomes

Upon completion of this course, students should be able to:

1. Outline the logic behind quantitative data analysis.
    a. Link theory and ideology in the choice of research methods.
    b. Understand the limits of the research questions answered through the studied methods of analysis.
    c. Identify different types of data and the levels of measurement of quantitative variables.
2. Distinguish between univariate, bivariate and multivariate analysis.
    a. Understand central tendency and dispersion and why it is important in univariate analysis.
    b. Take additional variables into account with bivariate and multivariate analyses.
3. Develop SPSS skills and perform basic data analysis tests.

Required Textbook

Roberts, L.W., Edgerton, J., Peter, T., & Wilkinson, L. (2015). *Understanding Social Statistics*. Don Mills: Oxford University Press.

Course Requirements and Assessments

This course contains four methods of evaluation, and completion of each component is required.

Midterm #1	25%
Midterm #2	25%
Research report	15%
Final exam	35%
Total	100%

Midterms (worth 25% each)
The first midterm will take place on February 8 and will cover material from weeks 1 through 5. The second midterm will take place on March 7 and will cover material from weeks 6 through 9. The midterms will be a combination of multiple choice questions, true/false questions, and short answers.

Final exam (35%)
The final exam will cover material from the entire course, with an emphasis on multivariate analysis and the material not covered by the two midterms. It will consist of multiple choice, true/false, and short answer questions. The date and time will be scheduled by the registrar's office and will take place during the scheduled exam period.

Research report (15%)
The research report will provide the opportunity to apply the material covered in class. The reports are to be a minimum of three (3) pages and maximum of four (4) pages. Students are expected to refer to the course textbook and at least two (2) outside resources. References should follow APA guidelines. Students will choose a research topic and each report should contain four sections. The first section will outline the choice of research problem and question to be studied, including the logic behind the choice of why quantitative methods are appropriate. The second section will outline the variables to be used, including the independent and dependent variables, levels of measurement, and the rationale for their inclusion. The third section of the report will include the type of statistical test that would be appropriate to answer your research question/problem and why. The final section will include the limitations to your proposed research study. The hard copy of the research report is due in class on March 28.

Course Outline

Week	Date	Topic	Readings
INTRODUCTION			
1	January 4	Introduction Syllabus	No readings
	January 6	Limits and variables	Chapter 1
2	January 11	Logic of statistics	Chapter 2
	January 13	Calculation and computers	Chapter 3
UNIVARIATE			
3	January 18	Introduction to univariate analysis	Chapter 4
	January 20	Measures of central tendency	Chapter 5
4	January 25	Measures of dispersion	Chapter 6
	January 27	Charts and graphs	Chapter 7
5	February 1	The normal curve	Chapter 8
	February 3	Review for Midterm 1 TA drop in day	No readings
6	February 8	**Midterm #1**	No readings
BIVARIATE			

	February 10	Understanding relationships	Chapter 9
7	February 15	Reading week-no classes ☺	
	February 17	Reading week-no classes ☺	
8	February 22	Bivariate tables	Chapter 10
	February 24	Scatterplot analysis	Chapter 11
9	February 29	Statistics for continuous connections	Chapter 14
	March 2	Review TA drop in day	No readings
10	March 7	**Midterm #2**	No readings
MULTIVARIATE			
	March 9	Multiple variables	Chapter 15
11	March 14	Multiple regression	Chapter 17
	March 16	Samples and population	Chapter 18
12	March 21	Confidence Intervals	Chapter 19
	March 23	Hypothesis testing	Chapter 20
13	March 28	Significance tests *****Research report due*****	Chapter 21
	March 30	Review for final exam TA drop in day	No readings
		Final exam TBD	

Make-up Policy

Students are expected to write all scheduled midterm and the final exam at the set dates and times. There will be no make-ups for the midterm exams. Missing a midterm will result in the final exam being worth 60%. The weighting of a missed midterm exam will NOT be made up on another midterm. Students must write at least two of the three exams, including the final exam. Students who miss an exam must provide a valid, fully documented excuse (e.g., a

medical form indicating a serious illness and period of incapacitation signed by a physician). Students should make every reasonable effort to write the midterms and final exam at the regularly scheduled dates and times. Late research reports will be penalized 10% per business day.

Electronic Device Policy

Within a class of this size, all cell phones and other electronic devices must be silenced during lecture to minimize the disturbance for other students. Due to the volume of material I cover each week, I do not object to the use of laptops or other devices to take notes during class but please ensure that you have muted the sound.

Attendance Policy

Class attendance is of key importance in this class. However, if you find that you cannot attend class due to personal or logistical reasons, it is your responsibility to obtain missed material from other students in the class.

Academic Integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo community 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 offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (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. For information on categories of offenses and types of penalties, students should refer to "Policy 71, Student Discipline" (http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm). For typical penalties check "Guidelines for the Assessment of Penalties" (http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm). http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

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" (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70). 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 (http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm).

Other sources of information for students: Academic Integrity website – Arts (http://arts.uwaterloo.ca/current-undergraduates/academic-responsibility). Academic Integrity Office – uWaterloo (https://uwaterloo.ca/academic-integrity/).

Accommodations for Students with Disabilities

The AccessAbility Services office, located in Needles Hall, Room 1132, 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 AccessAbility Services office at the beginning of each academic term.

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