

THE UNIVERSITY OF WATERLOO
STRATFORD CAMPUS
GBDA 205
Quantitative Methods

Winter, 2014

Section 1

M 10-30-12:20 DWE 3518
W 4:30-6:20 PAS 1229

Section 2

M 2:30-4:20 PAS 1241
W 2:30-4:20 PAS 1241

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Office Hours:	TBD	TBD

Course Description

GBDA 205 is designed to provide Global Business and Digital Arts students with an understanding of the basic statistical procedures used in the analysis of quantitative data. The course begins with a short introduction to the basic principles necessary for performing numerical analysis. Then the major portion of the course examines the common descriptive and inferential statistical procedures. The classroom format relies mainly on lectures and presentation of examples by the instructor. This is augmented by laboratory sessions providing students with hands-on experience in statistical computing while employing the widely utilized SPSS software program. Students are expected to work through the required text, completing the chapter exercises and a series of on-line quizzes. While calculating statistics is an important part of this course, it is also intended that students become familiar with when to use statistical analysis, what types of analyses to perform, and how to interpret results. The objectives of the course are twofold: (1) to learn to conduct a variety of statistical analyses appropriate to a range of research problems, and (2) to become literate consumers of the broad range of published statistics pertinent to the careers of GBDA graduates.

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

- A. Distinguish between the goals of the three branches of statistics as well as identify statistical procedures appropriate to each according to research conditions;
- B. Appreciate the underlying mathematical and probabilistic bases for inferential estimation and hypotheses testing;
- C. Be able to solve with the aid of a calculator a broad range of statistical problems drawing upon the bulk of most standard and widely used statistical tests;
- D. Have basic understanding of statistical computing along with familiarity with commonly used statistical software;
- E. Critically interpret the majority of statistical claims and arguments found in published research, work related reports and the media.

Required Text:

Joseph F. Healey and Steven G. Prus, *Statistics: A Tool for Social Research*, 2nd Canadian edition, Toronto: Nelson Education (ISBN: 13-978-0-07-665136-7)

Readings Available on LEARN:

Course resources and on-line help for GBDA 205 are provided through the university's web-based, course management system Waterloo Learn. This includes lecture notes, course handouts, on-line quizzes, course announcements and reporting of course grades. These resources will be upgraded regularly as the course progresses. All registered GBDA 205 students are automatically provided access to the course website on Waterloo Learn.

Calculator

It is recommended that you acquire a portable calculator. The ability to do simple arithmetic operations, plus one memory and a square root function, are all that is required. Since repeated calculations are required, a calculator with a fairly large, easy to use keyboard layout is preferred. As the bulk of grades for examinations are allocated on the basis of your demonstrating how to compute right answers (not just on whether the answer is correct), so-called "scientific," statistical or programmable calculators are of little advantage in this course.

Computer Account

The course will include instruction on the use of the computer program SPSS, *Statistical Package for the Social Sciences*, widely used in academic, government and business settings. For this you will need to have your University of Waterloo's free NEXUS account activated. If you are unsure how to do this review the Arts Computing Office student account information website at <http://aco.uwaterloo.ca/StudentsAccounts.html> or visit the ACO helpdesk, PAS 1077 (Open weekdays 9 a.m-4:30 p.m., extension 33190).

Course Requirements and Assessment:

1. Examinations

There will be two class tests during the term, and a final examination scheduled by the registrar following the end of term. The tests are tentatively scheduled for **Wednesday, February 5** and **Wednesday, March 19** but may be rescheduled according to class progress. Both examinations are worth **20 percent**, the first covering chapters 1 through 3 of the text, and the second covering chapters 4 through 9. The final exam will cover all course material and is worth **30 percent** of the final grade. The use of calculators will be permitted during exams. The use of a **ONE PAGE** (front and back) set of personal notes (containing anything you wish — formulae, instructions, definitions, prayers, etc.) per examination is also permitted.

2. Assignments

Learning statistics is a cumulative process. A strong background in mathematics is **NOT** required to succeed in this course; it is necessary, however, to stay strictly abreast of class progress. We

move quickly and if you fall behind it is often very difficult to catch up. Students should set aside regular study time each week for this material. To encourage staying up-to-date there are a series of on-line quizzes due throughout the term. These are meant to insure students are keeping up with readings and attempting to master the required material.

There are a total of ten assignments with each counting **three percent** toward the final course grade for a total of thirty percent in all. **Assignments 1-9** will each be graded on a **credit/no credit** basis: those awarded credit will receive the **full three percent**; **no credit means zero**. In addition, students who complete assignments 1-9 **all for credit** will automatically receive an **Earned Additional Credit** of three percent and not be required to submit assignment #10¹. Those students not receiving the earned additional credit will need to complete **Supplemental Quiz #10** which in this case will be graded on the basis of points actually earned on the assignment (not simply credit or no credit). In all cases assignments will be submitted electronically via Waterloo Learn.

Summary of Grade Allocation

(1) Midterm Examinations (2 @ 20%).....	40%
(2) Final Examination.....	30%
(3) Online Assignments	
• #1-9 (credit/no credit @ 3%).....	27%
• Earned Extra Credit <u>OR</u> #10.....	3%
TOTAL.....	100%

Minimum Examination Requirement in Order to Pass the Course

This course allocates a considerable portion of the course grade, 30 percent, simply for completing on-line quizzes necessary in order to learn the material. In the majority of cases students will find these marks to be a very helpful towards a positive outcome in the course. Academic standards do require, however, that each student demonstrate at least minimal passing knowledge of the course material in terms of grades earned on the formal in-class midterms and the final examinations. Therefore, in order to pass GBDA 205 a student must have at least a cumulative grade of 50 percent for the midterms and final examination. Failing to meet the minimum for examinations will result in the student receiving only what has been earned on these as a final grade.

¹– Note that this final three percent is not a bonus but a credit given to those students having earned it on the basis of completing all assignments to this point satisfactorily. Those not receiving this credit will, in virtually all cases, still be the beneficiaries of bonus points throughout the course on the basis of receiving 100% for each assignment successfully meeting the minimum requirement for credit (in which the minimum is always well below a perfect set of answers).

Policy on Missed Examinations

Students do, on occasion, for valid reasons miss tests and examinations. University policy is that illness should always be supported by the university's approved **Verification of Illness Form** (available at http://www.healthservices.uwaterloo.ca/Health_Services/aboutus.html) signed by a physician. If there are other grounds for missing an examination you should attempt to provide documentary evidence. **No matter what the grounds for missing an examination I do insist on being notified at the earliest possible moment so that we can arrange a make-up to take place soon after.** If leaving a message on my voice mail, be sure to provide a telephone number where you can be reached — you will be hearing from me the same day. The longer it takes to be notified of the reasons for a missed test, the less sympathetic I am towards the request to schedule a make-up. Missed examinations for which there are not justifiable grounds, or inadequate notification is given, will receive a zero

Policy on Late Submissions

Electronic assignments must be submitted by the stipulated date and time after which Waterloo Learn will stop accepting them. There is always ample time to complete assignments and opportunity to do so (24 hours/day, 7 days/week) and in fairness to other students, who often strive repeatedly to submit assignments to the minimum level required, extensions are not granted in individual cases. Extensions may sometimes be granted to the class as a whole in cases of technical problems with Waterloo Learn or for other events beyond our control. I do not mean to be unfair, but I am a firm believer that a good assignment (exam or whatever) is a DONE assignment (exam or whatever). So do yourself a favour and get it over with!

If for any reason you are finding it difficult to meet your obligations to the course, or are otherwise concerned about your progress, please come to discuss it with me at the earliest possible opportunity. I shall make every effort to help you, but experience dictates that we are far more likely to agree on a solution if we discuss it sooner rather than later.

Policy on Collaboration

Work submitted for assignments **MUST** be strictly only the student's own work. You may discuss and review problems with other students, but your submitted answers must be your own. Any evidence of copying other students' work, as well as collaboration among students in writing answers, is not allowed and will be heavily penalized. You may share ideas, but what you write and submit must be entirely your own.

The university requires the following statements to be contained in all course outlines:

- ***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:** *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. See the UWaterloo Academic Integrity Webpage [<https://uwaterloo.ca/academic-integrity>] and the Arts Academic Integrity Office Webpage [<http://arts.uwaterloo.ca/current-undergraduates/academic-responsibility>] for more information.*

- **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>]*

- **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/policy70>*

- **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 may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>*

- **Other sources of information for students:**
 - [Academic Integrity website \(Arts\)](#)
 - [Academic Integrity Office \(UWaterloo\)](#)

- **Accommodation for Students with Disabilities:**

The [Accessibility 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 AS office at the beginning of each academic term.

COURSE OUTLINE		
Date	Topic	Readings (Text)
Logic of Analysis and Descriptive Statistics		
Monday, Jan. 6	<ul style="list-style-type: none"> • Course introduction, requirements • Statistical notation / Math review 	
Wednesday, Jan. 8	<ul style="list-style-type: none"> • Statistical goals • Measurement Level & Choice of Statistic 	Chapter 1
Monday, Jan. 13	<ul style="list-style-type: none"> • Descriptive Statistics: Nominal/Ordinal levels 	Chapter 2
Wednesday, Jan. 15	<ul style="list-style-type: none"> • Descriptive Statistics: Continuous level • SPSS Lab (PAS 1237) 	Chapter 2
Sunday, Jan. 19*	<ul style="list-style-type: none"> • Exercise #1 Due: Summation Sign & Ch 1 	
Monday, Jan. 20	<ul style="list-style-type: none"> • Measures of Central Tendency 	Chapter 3
Wednesday, Jan. 22	<ul style="list-style-type: none"> • Measures of Dispersion 	Chapter 3
Monday, Jan. 27	<ul style="list-style-type: none"> • Measures of Dispersion 	Chapter 3
Inferential Statistics & Hypothesis Testing		
Wednesday, Jan. 29	<ul style="list-style-type: none"> • Probability / Probability Distributions • SPSS Lab (PAS 1237) 	Chapter 4
Sunday, Feb. 2*	<ul style="list-style-type: none"> • Exercise #2 Due: Descriptive Statistics 	
Monday, Feb. 3	<ul style="list-style-type: none"> • The Normal Curve • Review for first Midterm 	Chapter 4
Wednesday, Feb. 5	First In-Class Test	Chapters 1-3
Monday, Feb. 10	<ul style="list-style-type: none"> • Normal Curve Exercise • The Central Limit Theorem 	Chapter 5
Wednesday, Feb. 12	<ul style="list-style-type: none"> • Confidence Intervals • SPSS Lab (PAS 1237) 	Chapter 6
Feb. 17 - 21 No Classes: Reading Week		
Sunday, Feb. 23*	<ul style="list-style-type: none"> • Exercise #3 Due: Probability Distributions 	
Monday, Feb. 24	<ul style="list-style-type: none"> • Logic of Hypothesis Testing • One-sample Significance Tests 	Chapter 7
Wednesday, Feb. 26	<ul style="list-style-type: none"> • One-sample Significance Tests • Assignment #4 Due: SPSS (1) 	Chapter 7

Comparing Means		
Monday, March 3	<ul style="list-style-type: none"> Differences of Means tests Differences of Proportions 	Chapter 8
Wednesday, March 5	<ul style="list-style-type: none"> Paired Samples Differences of Means SPSS Lab (Pas 1237) 	Chapter 8
Sunday, March 9*	<ul style="list-style-type: none"> Exercise #5 Due: One-sample Tests 	
Monday, March 10	<ul style="list-style-type: none"> Analysis of Variance Strength of Association 	Chapter 9
Categorical Data Analysis		
Wednesday, March 12	<ul style="list-style-type: none"> Chi-square Tests (Independence / Goodness of Fit) 	Chapter 10
Sunday, March 16*	<ul style="list-style-type: none"> Exercise #6 Due: Differences of Means 	
Monday, March 17	<ul style="list-style-type: none"> Measures of Association 	Chapters 11-12
Wednesday, March 19	Second In-Class Test	Chapters 4-9
Monday, March 24	<ul style="list-style-type: none"> Measures of Association 	Chapters 11- 12
Correlation and Regression		
Wednesday, March 26	<ul style="list-style-type: none"> Bivariate Regression SPSS Lab (PAS 1237) 	Chapter 13
Sunday, March 30*	<ul style="list-style-type: none"> Exercise #7 Due: Crosstabulation 	
Monday, March 31	<ul style="list-style-type: none"> Bivariate Regression/Correlation 	Chapter 13
Wednesday, April 2*	<ul style="list-style-type: none"> Significance Tests Review for the Final Exam Exercise #8 Due: SPSS (2) 	Chapter 13
Monday, April 7*	<ul style="list-style-type: none"> Exercise #9 Due: Regression/Correlation 	
Sunday, April 20* (tentative)	<ul style="list-style-type: none"> OPTIONAL Exercise #10 Due 	
TBD	FINAL EXAMINATION	Chapters 1-13