Statistics in Business
Course Syllabus

Information

Course
BAMG 20100, Spring Semester 2010.
•Web Page: `http://www.nd.edu/~bizstat`
•Where: Room 317 DeBartolo Hall.
•When: 9:30 to 10:45 PM Tuesdays and Thursdays.

Professor
Ken Kelley, Ph.D.
•Email Address: KKelley@ND.Edu
•Office Hours: Tuesday & Thursday 8:00–9:15 AM and 2:00-3:15 PM, by appointment, or anytime my office door is open.
•Office Location: 363B Mendoza College of Business.
•Office Phone Number: (574) 631-1459.
•Mobile Phone Number: (574) 607-5478 (Text messages are fine).

Teaching Assistants
Michael Baznik (MBaznik@ND.Edu) and *Eileen Sullivan* (ESulliv6@ND.Edu)
•Office Hours: Sundays, Mondays, and Wednesdays, 7:00–8:30 PM and by appointment.
•Office Location: L051 Mendoza College of Business.

Description

Statistics is the science that deals with the collection, description, analysis, interpretation, and presentation of data. *Statistics in Business* applies statistical methods in a business context in order to address business related questions and help make evidence based decisions. In *Statistics in Business* you will learn to apply commonly used statistical methods in business contexts and how to interpret analyses performed by others.

Objectives

The overarching objective of *Statistics in Business* is for students to describe data and make evidence based decisions using well-reasoned statistical arguments. The specific course objectives are to:

- describe data with descriptive statistics;
- perform statistical analyses;
- interpret the results of statistical analyses;
- make inferences about the population from sample data.

We will use Microsoft Excel to implement many of the statistical methods we discuss. Access to Microsoft Excel and Word is required.

Required Textbook

Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2009). *Essentials of modern business statistics with Microsoft Office Excel* (4th edition). South-Western: Mason, OH.

This textbook presents the numerous processes involved in making evidence based, real-world business decisions. The book is written from a conceptual point of view and focuses on the meaning of the numbers, not the intricacies of calculations. This approach to statistical education is endorsed by the American Statistical Association and their Guidelines for Assessment and Instruction in Statistics Education (i.e., the GAISE Report).

Electronic Devices

There are designated "laptop days," where if you have and are able to bring a laptop computer to class you are welcome to do so. On those days, Excel, but not other applications, may be used on laptops so that students can practice using Excel. However, on non-laptop days, laptops, mobile phones, iPods/MP3 players, and other electronic devices are not allowed.

Attendance and Late/Missed Assignments

Students are expected to attend all classes. If a University approved reason for missing class is provided, the student may make-up any missed work. When a University approved excuse is provided for a day when a quiz was administered or assignments turned in, the student must make-up the quiz before the next class meeting and/or turn in homework at the beginning of the next class. Quizzes must be taken before and assignments must be turned in at the beginning of the next class because the graded quizzes and homework will be returned with feedback to the other students the next class. Topics discussed in class will be the basis for some questions on the quizzes and exams. Correspondingly, it is important to attend every class.

Participation

Students are required to work on in-class assignments and actively participate during class, which necessarily requires student attendance. Your time in class will be more enjoyable and productive if you participate fully in activities, discussions, and ask as well as answer questions. The participation component of the course will count 5% toward the course grade.

Assignments

There will be an assignment for most topics, which are generally due at the beginning of class a week following topic completion. So that feedback on assignments can be given, hard copies are required. For numeric problems with an incorrect final answer, partial credit will be rewarded only if the preceding work is documented. Similarly, when using Excel, students should provide the relevant part of the Excel worksheet with and without "show formulas," to ensure the possibility of partial credit. As much as possible, homework assignments should use Word, with any Excel figures and/or tables pasted into the Word document. The assignment component of the course grade will omit the lowest percentage score from the assignments and all other assignments will be weighted according to the number of possible points. Assignments, along with the assignment's due date, will be posted on the course web site (http://www.nd.edu/∼bizstat). The assignment component will count 20% toward the course grade.

Quizzes

Students are required to take a quiz on most Thursdays. The quiz component of the course grade will omit the lowest percentage score from the quizzes and all other quizzes will be weighted according to the number of possible points. The quiz component will count 15% toward the course grade.

Examinations

There are three examinations throughout the semester. Examinations are based on the readings noted below on the schedule, assignments, in-class worksheets, quizzes, and class discussions. The format of the examinations is varied with multiple choice, fill-in, short answer, and calculation based questions. Students are allowed to use a help sheet that is one standard ($8\frac{1}{2} \times 11$) piece of paper with handwritten notes on each side for each of the three examinations. The help sheet for a specific exam may contain only handwritten notes, and thus no material may be printed or attached to the help sheet. Each help sheet will be handed in with the exams. Standard calculators are required. Exam 2 and Exam 3 are semi-cumulative, in the sense that the material continues to build on itself. Please take special notice of the examination dates given in the schedule below, as they are fixed and not generally negotiable. Exam 1, Exam 2, and Exam 3 account for 17.5%, 20%, and 22.5% of the final grade, respectively.

Getting Help

Help is regularly available (Formally, 7 office hours of help a week!) and we (myself and the teaching assistants) will do whatever we can to help you you master the material. Statistics more than many subjects is an incremental process where material continues to build on other material. The last topic, for example, combines various aspects of almost everything else discussed in the course. That being said, if you are not sure that you understand the material completely, please seek help early and often. We will meet with you whenever possible.

Collaboration

Students are encouraged to discuss lectures, handouts, readings, and assignments outside of class. Experience has shown that discussing course readings and assignments generally leads to better success for all who take part in the discussion, provided that all parties take part equally. However, each student is responsible for turning in his or her own separate assignments.

Grading

Grading for *Statistics in Business* will be based on quizzes (15%), in-class work (5%), assignments (25%), and examinations (60% total). The following equation governs the numeric course grade,

$$Grade = .15Quizes + .05Participation + .20Assignments + .175Exam_1 + .20Exam_2 + .225Exam_3.$$

Numeric grades are reported ordinally as letters. The way in which a numeric grade maps onto a letter grade is as follows:

A	93 or more
A−	90 or more but less than 93
B+	87 or more but less than 90
B	83 or more but less than 87
B−	80 or more but less than 83
C+	77 or more but less than 80
C	73 or more but less than 77
C−	70 or more but less than 73
D	60 or more but less than 70
F	less than 60

The computed numeric grade from the equation is applied directly to the scale above and thus no rounding of numeric grades is necessary when determining the letter grade. A grading curve *may* be used to increase the mean of the distribution of grades.

Course Schedule

Date	**Topic(s)**	**Topical Reading(s)**
•1/12	•Introduction to Course •Course Expectations	
•1/14	•Data & Statistics: An Overview •Probability	•Sections 4.1
•1/19	•Probability (Continued)	•Sections 4.2–4.4
•1/21 •1/26	•Describing Distributions Numerically	•Sections 3.1–3.4, & 3.6
•1/28	•Uniform Distributions •Normal Distributions	•Sections 6.1–6.2
•2/2	•Normal Distributions (Continued)	•Sections 6.2
•2/4	•Measures of Association Between Two Variables	•Section 3.5
•2/9	•Wrap-up Part 1 Topics •Review for Exam 1 •Homework Q & A	•Prepare Questions

•2/11	•Exam 1 (Exam will be during class.)	•Bring Calculator •Bring Help Sheet
•2/16	•Review of Exam 1 •Sampling Distributions •The Sampling Distribution of the Sample Mean	•Sections 7.1–7.5
•2/18	•Interval Estimation for a Population Mean (σ unknown) •Interval Estimation for a Population Mean (σ known)	•Sections 8.1–8.2
•2/23 •2/25	•Rationale of Hypothesis Testing •Hypothesis Testing for a Population Mean (σ known)	•Sections 9.1–9.3
•3/2	•Hypothesis Testing for a Population Mean (σ unknown)	•Section 9.4
•3/4	•Simple Linear Regression	•Sections 12.1–12.2
•3/9 •3/11	•Spring Break!	
•3/16	•Simple Linear Regression (Continued)	•Sections 12.3 & 12.5
•3/18	•Wrap-up Part 2 Topics •Review for Exam 2 •Homework Q & A	•Prepare Questions
•3/23	•Exam 2 (Exam will be during class.)	•Bring Calculator •Bring Help Sheet
•3/25	•Review of Exam 2 •Ethics, Data, and Data Ethics	•Section 1.7
•3/30	•Inference for Mean Comparisons from Paired Samples	•Section 10.3
•4/1 •4/6	•Inference for Mean Comparisons of Independent Groups	•Sections 10.1–10.2
•4/8 •4/13	•Inference for Proportions •Inference for the Difference Between Proportions	•Sections 8.4 & 9.5 •Sections 11.1 & 11.3

•4/15 •4/20 •4/22	•Multiple Regression	•Sections 13.1–13.7
•4/27	•Wrap-up Part 3 Topics •Review for Exam 3 •Homework Q & A	•Prepare Questions
•5/6	•Exam 3 •7:30-9:30 PM •Location will be announced.	•Bring Calculator •Bring Help Sheet

Academic Honesty

Students in *Statistics in Business* are expected to abide by the University of Notre Dame Honor Code for all matters relating to the course. Recall that the University's Honor Code states "as a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."

Syllabus Disclaimer

The information provided on this syllabus is tentative and may be modified. Modifications to the syllabus will be announced during class.