Course Syllabus // Business Analytics I (GB 365)

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Course Description

Who is the most likely winner of the next presidential election? How does a fast food company decide to change their menu? Are there racial or gender biases in the university admissions process? What is the fastest way for planes to board passengers? Answering any of these questions requires a knowledge of analytical methods and familiarity with quantitative reasoning. Further, the explosion of data in recent years makes these skills crucial in modern business.

In this course, you will develop your quantitative intuition through practical application using Microsoft Excel. Specifically, you will learn how to produce summary statistics in both tabular and visual forms using data. You will also learn the essentials of probability and apply it to decision problems where there is uncertainty. The second half of the course will emphasize hypothesis testing and regression analysis, with an introduction to simulation methods. Throughout this course, we will pay special attention to effectively writing and presenting data analysis.

We will use business cases and blog, journal, and newspaper articles to link the course material to real world settings. We hope that you will end up enjoying business analytics as much as we do!

Learning Objectives

By the end of this class, you will:

- Acquire “statistical literacy,” meaning that you can interpret statistics frequently used in current events, industry reports, and so on;
- Distinguish between descriptive and inferential statistics, and apply skills such as data summarization, hypothesis testing, and regression analysis, using Excel;
- Apply the core concepts of probability to decision-making under uncertainty, including an introduction to simulation;
- Synthesize your knowledge with quantitative business cases, completed in teams; and
- Effectively communicate data analyses in written, visual, and oral formats.

Prerequisites

No specific mathematics or software background is necessary for this course.

Friday Discussion Sessions

You need to register for a Friday discussion session. These sessions will be used to reinforce lecture material and to help you with the cases and exam preparation. In four of the discussion sessions, you will take a quiz to help you, and us, take stock of your progress with the course material. You will have an opportunity to go over the quiz solutions in discussion.

Required Software

We will use Microsoft Excel, so please make sure you have it installed on your computer (most recent versions of the program should be fine).

Recommended Textbook

There is no required textbook for this course. We will provide you the needed course content during lecture. If you wish to have another resource, however, we will provide you the mapping of the lecture content to relevant sections in the following recommended textbook. We will not assume that you have read the following text in preparing for exams.

Albright and Winston. *Business Analytics: Data Analysis and Decision Making*, 5th Edition. Hard copy is available at the bookstore, and copies are also on reserve at the Grainger library.

(Many students also find the following textbook useful as an easy-to-follow resource:
Gonick, Larry. *The Cartoon Guide to Statistics*. 1993. This book is available for purchase on Amazon, and older versions may also available for free online download.)

Exams

There will be two exams on **Mar 9th** (in-class) and **May 12th** (non-cumulative, 7:30 - 8:20pm, room TBD). You may use a scientific calculator (no graphing calculators) for each exam. If you cannot take the exams on these days, you must let us know by Jan 28th so we can make alternative arrangements.

Cases

There will two cases that involve application of lecture concepts and Excel analyses to business problems. You will work on these cases in teams of 3, and we will provide you with a dataset with structured guidelines for analyses. Your case submissions will be graded not only on the technical accuracy of your analyses, but also on your communication of the results. Late case submissions will be penalized heavily, so please make sure to meet the deadline.

Homework

Homework will not be graded. We will, however, post four homework assignments (which have Excel components) with solutions. We expect you to do these and go over the solutions on your own; the homework assignments will feature problems similar to the exams and cases.

Grading & Key Dates

There are a total of 100 points to be earned in this class, distributed as follows:

	Date	Points
Case I	Feb 26th (due on Moodle at noon)	25
Exam I	Mar 9th (in-class, 50 minutes)	25
Case II	Apr 22nd (due on Moodle at noon)	25
Exam II	May 12th (room TBD, 7:30pm, 50 minutes)	25

Class Attendance and Participation

Participation in lecture and discussion sessions will be noted and may impact your final course grades in borderline cases.

Laptop Policy

As per Wisconsin School of Business policy, the use of personal electronics is not permitted during lecture.

Chain of Command

To help us streamline our communication with you and ensure quick responses, please note:

- All class resources are available on the Moodle website, and course e-mails will be sent via Moodle. You can always check the website for the most up-to-date information.
- If you e-mail us, please include **#GB365** in the subject line.
- Please direct questions about homework, quizzes, and cases to your TA.
- Please direct questions about lecture or anything else to us or to your TA.

Additional Resources

We have arranged for you to have access the tutoring desk at the Business Learning Center (<http://www.bus.wisc.edu/blc/>). This is a useful resource if you need help with the course material beyond what we can provide.

Your success in this class is important to us. If there are circumstances that may affect your performance in this class, please let us know as soon as possible so that we can work together to develop strategies for adapting assignments to meet both your needs and the requirements of the course. The McBurney Disability Resource Center provides resources for students with disabilities. You will need to provide documentation of disability to them in order to receive official university services and accommodations, but please talk to us if you have any concerns.

Course Schedule (tentative)

Session	Topic	Book Chapter	Date
1	Introduction & Orientation: Data-Driven Performance in Organizations	2	1/20
D	Getting to Know Excel I	-	1/22
2	Exploring Data I: Data Summarization and Pivot Tables	2	1/25
3	Exploring Data II: Data Visualization	3	1/27
D	Case Clinic I	-	1/29
4	Exploring Data III: Effectively Communicating Results	3	2/1
5	Why is Big Data a Big Deal? Benefits and Security/Privacy Concerns	3	2/3
D	Getting to Know Excel II	-	2/5
6	Probability Puzzles That Matter I	4	2/8
7	Probability Puzzles That Matter II	4	2/10
D	Quiz 1 + Q&A	-	2/12
8	Discrete Probability Distributions	5	2/15
9	Continuous Probability Distributions	5	2/17
D	Case Clinic II	-	2/19
10	Decision Making under Uncertainty: Decision Trees and Risk Profiles	6	2/22
11	Best, Worst, and Most Likely Cases: Sensitivity Analysis	6	2/24
D	Quiz 2 + Q&A	-	2/26
12	Generalizing from Samples	7	2/29
13	**Case Discussion**	-	3/2
D	**Preparing for Exam**	-	3/4
14	Making Statements with Precision I: Confidence Intervals	8	3/7
15	***** Exam I *****	-	3/9
D	Exam Review	-	3/11
16	Making Statements with Precision II: Confidence Intervals	8	3/14
17	Thinking Like a Data Scientist I: Hypothesis Testing	9	3/16
D	Case Clinic I	-	3/18
	Spring Recess!		
18	Thinking Like a Data Scientist II: Hypothesis Testing	9	3/28
19	Chi-Square Tests	9	3/30
D	Quiz 3 + Q&A	-	4/1
20	Building Business and Economic Models I: Regression Basics	10	4/4
21	Building Business and Economic Models II: Regression Basics	10	4/6
D	Regression Lab	-	4/8
22	Hands-On Regression Analysis	10	4/11
23	Using Data to Build Your Own Business: Introduction to Simulation	15	4/13
D	Case Clinic II	-	4/15
24	Using Data to Build Your Own Business: Building a Simulation Model	15	4/18
25	Using Data to Build Your Own Business: Applications of Simulation	15	4/20
D	Quiz 4 + Q&A	-	4/22
26	Frontiers of Business Analytics	-	4/25
27	**Case Discussion**	-	4/27
D	Preparing for Exam	-	4/29
	TBD	-	5/2
	TBD	-	5/4
28	***** Exam II *****	-	5/12