Department of Decision and Information Sciences

BZAN 6310, Quantitative Analysis for Business
Course Information
Spring 2020

Instructor: Dr. Norm Johnson   Email: njohnson@bauer.uh.edu
Office: 280C Melcher   Office phone: 713-743-4164
Office hours: Mon - 4:00-5:00pm or by appointment

***Required Text: Albright, S. C., and Winston, W.*, "Business Analytics: Data Analysis & Decision Making, 6th edition, Cengage Learning.**

Course Description:

Today companies collect vast amounts of data quite easily. But in their raw form, these data are usually meaningless. In order to make them meaningful, and hence useful, they must be analyzed for trends, patterns, relationships, and insightful information. This course covers a variety of statistical methods, from simple to complex, to help students analyze such data sets, uncover important information, and create models for predicting business outcomes. For example, you might learn how to develop a model that can predict which customers are most likely to abandon a subscription service or who is most likely to default on payments. In general, there is a heavy emphasis throughout the course on the fundamental concepts and theories of analytical methods that are useful in decision making. Though these methods vary, the objective to equip you with decision-making tools that you can apply in your business careers is the same. The methods are taught by an example-based approach. In this regard, emphasis will be placed on realistic business problems. The main software that is used for the adopted approach is ***Microsoft Excel with an Add-in called StatTools***, but you may also learn the SAS software JMP that is used extensively in predictive analytics..

Teaching Methods:

1. Lectures: Important material from the text and outside sources will be covered in class. Students should plan to take careful notes as not all material can be found in the texts or readings. Discussion is encouraged as is student-procured, outside material relevant to topics being covered.

2. Assignments: Problems and readings will be periodically assigned to help support and supplement material found in the text. In particular, end of chapter questions will be routinely assigned and must be turned in on time.

3. Exams: Exams/Quizzes will be closed book/note and will test material that is covered in the course. Review sheets will be provided prior to the exam day. The final exam will be cumulative to the extent that it will include topics that are covered earlier in the course.

NOTES ONLINE: You will have access to all material via the **Blackboard Learn** application.
- The lecture slides will be available in the CLASS NOTES section of the class web site. The slides posted within 24 hours prior to each class session. But, on a few rare occasions, I might make minor changes to them **just in time for our class**. Of course, I will make you aware of these changes in class.

4. **Announcements** regarding the class such as schedule changes, assignments, projects, and so on will be made in class during the first 10 minutes as well as on the web at the Announcements page. If you do not make it to class on time, then please be sure to check if there are announcements.

5. **Tutoring:** To be announced.

6. **Contacting the Professor:** You can reach me by telephone or email. If you try to reach me, and you are unable to do so, then leave a message for me. I will try to get back to you within 48 hours.

7. **Teaching Assistant (TA):** As we cover this course, I will have the support of a TA. Her name is **Sarah Howe**, and her email address is "sarahhoweuh@gmail.com."

8. **Grading:**

   1. Exam #1: 20% of final grade.
   2. Exam #2: 30% of final grade.
   3. **Group Project Assignment: 30% of final grade**.
   4. Home Work Assignment (*to be done on a group level*): 20% of final grade.

   Final course letter grade follows the numeric-letter grade system used here at University of Houston.

Course Policies:

Missed Classes: The student is responsible for obtaining material, which may have been distributed on class days when he/she was absent. This can be done through contacting a classmate who was present or by contacting the instructor during his office hours. Missed or late exams cannot be made up under any circumstances, unless an official excuse is provided. **Any uncoordinated, unexcused missed exam will result in a score of 0 for that exam.**

Assignments (Project and Home Work): All assignments are due at the beginning of class on the due date. You are required to be a part of a group with about 4/5 other students. You will work with your group members on all out of class assignments. **On the due dates for each assignment, each group will turn in one copy of responses**. Toward the end of the semester, you will have an opportunity to conduct a peer evaluation of what each member of your group contributes to the work done. I will use the score on these evaluations in a weighted fashion to determine each group member's score for assignments. A copy of the peer evaluation form is at the end of this document.

Academic Dishonesty: Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper or project; failure in course; and or expulsion from the University. For more information, refer to the "Academic Dishonesty" policy in the University's Catalog. The University of Houston Academic Honesty Policy is strictly enforced by the C. T. Bauer College of Business. No violations of this policy will be tolerated in this course. A discussion of the policy is included in the University of Houston Student Handbook, http://www.uh.edu/dos/hdbk/acad/achonpol.html. Students are expected to be familiar with this policy.

Need for Assistance: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as outlined in this document, or which will require academic accommodations, please notify me as soon as possible. I will recommend that you contact the Center for Students with Disabilities. The contact person is Justin Dart in the CSD building #568, room 110. The numbers for the CSD office are Ph: 713-743-5400; TDD: 713-749-1527; Fax: 713-743-5396 or email: uhcsd@uh.edu.

Posting of Grades: Though I might sometimes post your scores on Blackboard, most times I will report them to you in class. If you do not wish to have your grades posted online, then please notify me of this via email. And, if you are absent when scores are reported, then you can drop by my office for them during my scheduled office hour.

Tentative Lecture Outline

This outline is tentative. It may change in the event of unforeseen class disruptions. As such, it could be modified as time goes by. You will see below that practice questions are assigned. These will be announced in class and I will let you know when, and how, to turn them in.

No.	Date	Topic	Chapter

1	01/13	**Introduction to Course**
		Expectations, Tools and Group formation
		Introduction to Data Analysis
		& Decision Making
		   • Modeling and Models
		Describing the Distribution of a
		Single Variable
		   • Basic Concepts – Population, sample & data
		   • Descriptive measures for Categorical Variables
		   • Descriptive measures for Numerical Variables
		   • Summary measures
		   • Outliers and Missing values
			Chap One
			
			Chap Two

2	01/27	**Finding Relationships among Variables**
		   • Categorical & Numerical
		   • Scatter Plots
		   • Measures of Variation
		   • Correlation and Covariance
			Chap. Three

	[01/29	**Last day to drop or withdraw without receiving a grade]**	

3	02/03	**Probability and Probability Distribution**
		   • Correlation and Covariance
		   • Probability Essentials
		   • Distribution of Single Random Variable
		   • Conditional Mean and Variance
		   • Distribution of Two Random Variables
		   • Independent Random Variables
			Chap Four

4	02/10	**Home Work Assignment 1 due**
		
		Normal, Binomial, Poisson and
		Exponential Distribution
		   • The Binomial Distribution, BD
		   • Applications of BD
		   • Poisson & Exponential Distributions
			Chap Five

5	02/17	**Normal Distribution, ND** Applications of ND Poisson & Exponential Distributions	**Chap Five**
	02/24	**Exam #1 (2 hours) – [Chapters 1 to 5, inclusive]**	

6	02/24	**Sampling and Sampling Distribution**
		   • Methods for selecting random samples
		   • Introduction to estimation
			Chap Seven

7	03/02	**Sampling and Sampling Distribution**	**Chap Seven**
		• Methods for selecting random samples	
		• Introduction to estimation	
		Confidence Interval Estimation	**Chap Eight**
		• Confidence Interval for a Mean	
		• Confidence Interval for a Proportion	

03/09-03/14   SPRING   BREAK

8.	03/16	**Home Work Assignment 2 due**	
		Confidence Interval Estimation	**Chap Eight**
		• Confidence Interval for a Mean	
		• Confidence Interval for a Proportion	
		Confidence Interval Estimation	**Chap Eight**
		• Confidence Interval for the Difference between Means	
		• Controlling CI length	

9.	03/23	**Regression Analysis: Estimating Relationships**	**Chap. Ten**
		• Scatterplots: Graphing Relationships	
		• Correlations: Indicators of Linear Relationships	
		• Simple Linear Regression	
		• Multiple Regression & Modeling possibilities	

[04/02   The last day to drop this course or withdraw with a "W"]

10.	03/30	**Regression Analysis: Statistical Inference**	**Chap Eleven**
		• Multiple Regression & Modeling possibilities	
		• Validation of Fit	
		• Statistical Model	
		• Inferences about Regression Coefficients	
		• Stepwise Regression	

11.	04/06	**Hypothesis Testing**	**Chap. Nine**
		• Concepts in Hypothesis Testing	
		• Hypothesis Tests for a Population Mean	
		• Hypothesis Tests for other Parameters	
		• Test for Normality	
		• One-Way ANOVA	

12.	04/13	**Hypothesis Testing**	**Chap. Nine**
		• Test for Normality	
		• One-Way ANOVA	
		Classification Trees	**Chapter 17**

13	04/20	**Exam # 2 (2 hours) [Chapters 7 to 11, inclusive]**	
		Group project presentation	

Peer Evaluation Form for Group Work

Your name _____

Write the name of each of your group members in a separate column. For each person, indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). **Total the numbers in each column.**

Evaluation Criteria	Group member:	Group Member:	Group member:
Attends group meetings in a timely manner.			
Contributes meaningfully to group discussions.			
Completes group assignments on time and of high quality			
Demonstrates a cooperative and supportive attitude.			
Contributes significantly to the success of the assignment/project.			
TOTALS			