



**BA 501- 01E Quantitative Analysis for Management (CRN # 81733)
Course Syllabus (Fall 2012): 8/27/2012 - 10/19/2012**

Professor: Dr. Kishor Kumar Guru-Gharana
Office: BA 323
Office Hrs: Mon-Tue-Wed 9:30A.M.-11:49 A.M. at BA 323
Class Hrs: Mon 1:00 pm – 5:00 pm at BA 340
Phone: 903.886.5687 (off); 903.886.5693 (fax)
Email: kishor.guru-gharana@tamuc.edu

Required Text:

D. A. Lind/W. G. Marchal/S. A. Wathen, Statistical Techniques in Business & Economics – McGraw Hill Irwin, 15th edition ISBN- 978-0-07-340180-5 or 14th ed. ISBN- 978-0-07-340176-8 of the same book.

Course Description:

This course satisfies the MBA background requirements for quantitative analysis and production management techniques. The course will cover descriptive statistics, inferential statistics and math models with business applications to analyze management and organizational problems. Specific topics include: measures of central tendency and variation, probability distributions, estimation, hypothesis testing, regression and correlation, decision theory, linear programming, transportation and assignment models, and inventory management and queuing theory models.

Course Prerequisites:

Math 141, 175 or equivalent.

Course Objectives: Student Learning Outcomes

The objective of this course is to provide an understanding for the undergraduate business student on statistical concepts to include measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing, regression, and correlation analysis, multiple regression and business/economic forecasting. By completing this course the student will learn to perform the following:

- 1) How to calculate and apply measures of location and measures of dispersion.
- 2) How to apply discrete and continuous probability distributions to various business problems.
- 3) To understand the meaning of a null and an alternative hypothesis as well as the meaning of type I and type II error. Further, to perform test of hypothesis as well as calculate confidence interval for a population parameter for a single mean, including use of the t and the z test.
- 4) Compute and interpret the results of Bivariate Regression and Correlation Analysis and be able to interpret computer generated regression results
- 5) Learn the basic concepts of Linear Programming, Network Analysis and Decision Theory

Rubric

Criteria (Course Objectives)	1 (Unsatisfactory)	2 (Emerging)	3 (Proficient)	4 (Exemplary)
1. How to calculate and apply measures of location and measures of dispersion.	Student cannot calculate and apply any measures of location and measures of dispersion.	Student can calculate and apply some of the measures of location and measures of dispersion.	Student can calculate and apply most of the measures of location and measures of dispersion.	Student can calculate and apply all of the measures of location and measures of dispersion.
2. How to apply discrete and continuous probability distributions to various business problems.	Student cannot apply discrete and continuous probability distributions to any problems.	Student can apply of discrete and continuous probability distributions to some problems.	Student can apply of discrete and continuous probability distributions to most of the problems.	Student can apply discrete and continuous probability distributions to all the problems.

3. Understand the Hypothesis Testing: Understand the meaning of a null and an alternative hypothesis	3.1 Student doesn't understand the meaning of a null and an alternative hypothesis	3.1 Student understands the meaning of a null and an alternative hypothesis	3.1 Student understands the meaning of a null and an alternative hypothesis	3.1 Student understands the meaning of a null and an alternative hypothesis
3.2 Understand the meaning of type I and type II error.	3.2 Student doesn't understand the meaning of type I and type II error.	3.2 Student understands the meaning of type I and type II error.	3.2 Student understands the meaning of type I and type II error.	3.2 Student understands the meaning of type I and type II error.
3.3 Be able to perform test of hypothesis	3.3 Student cannot perform test of hypothesis	3.3 Student is able to perform some test of hypothesis	3.3 Student is able to perform some test of hypothesis	3.3 Student is able to perform some test of hypothesis
3.4 Be able to calculate confidence interval for a population parameter for a single mean, including use of the t and the z test.	3.4 Student cannot calculate confidence interval for a population parameter for a single mean, including use of the t and the z test	3.4 Student is able to calculate confidence interval for a population parameter for a single mean, including use of the t and the z test (2 out of 4)	3.4 Student is able to calculate confidence interval for a population parameter for a single mean, including use of the t and the z test (3 out of 4)	3.4 Student is able to calculate confidence interval for a population parameter for a single mean, including use of the t and the z test
4.1 Compute and interpret the results of Bivariate Regression and Correlation Analysis	Student cannot compute and interpret the results of Bivariate Regression and Correlation Analysis.	Student can compute and interpret some of the results of Bivariate Regression and Correlation Analysis.	Student can compute and interpret most of the results of Bivariate Regression and Correlation Analysis.	Student can compute and interpret all of the results of Bivariate Regression and Correlation Analysis.
4.2 Be able to interpret regression results generated by computer software.	4.2 Student is unable to interpret computer generated regression results	4.2 Student is able to interpret some of the computer generated regression results	4.2 Student is able to interpret most of the computer generated regression results	4.2 Student is able to interpret all of the computer generated regression results
5. Learn the basic concepts of Linear Programming, Network Analysis and Decision Theory	Student does not understand the basic concepts of Linear Programming, Network Analysis and Decision Theory	Student understands some of the basic concepts of Linear Programming, Network Analysis and Decision Theory	Student understands most of the basic concepts of Linear Programming, Network Analysis and Decision Theory	Student understands all of the basic concepts of Linear Programming, Network Analysis and Decision Theory

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library, Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

Statement of Ethical and Professional Conduct:

The College of Business and technology at Texas A&M University –Commerce faculty, staff and students will follow the highest level of ethical and professional behavior. We will strive to be recognized as a community with legal, ethical and moral principles and to teach and practice professionalism in all that we do.

In an academic environment we will endeavor to not only teach these values but also to live them in our lives and daily work. Faculty and staff will be held to the same standards and expectations as our students. Failure to abide by these principles will result in sanctions up to and including dismissal.

Actionable Conduct:

These are five different types of actions that will bring sanction. They are:

1. Illegal activity: Violation of any local, state or federal laws that prohibit the offender from performance of his or her duty.
2. Dishonest conduct: Seeking or obtaining unfair advantage by stealing or receiving copies of tests or intentionally preventing others from completing their work. In addition falsifying of records to enter or complete a program will also be considered dishonest conduct.
3. Cheating: The unauthorized use of another's work and reporting it as your own.
4. Plagiarism: Using someone else's ideas and not giving proper credit.
5. Conclusion: Acting with others to perpetrate any of the above actions regardless of personal gain.

Sanctions:

In the case of staff or faculty the immediate supervisor will be the arbiter of actionable behavior and will use Texas A&M University Commerce and/or Texas A&M University System Policy and Procedures as appropriate to guide sanctions.

Faculty, guided by clearly delineated policy in the course syllabus, will be arbiter for in-class violations. All violations will be reported to the dean of the college of Business and technology to assure equity and to provide appropriate counsel. In addition, the Dean will maintain the records of violations by students. Second violations will be reviewed by the Dean and sanctions beyond those of the faculty up to and including suspension and permanent expulsion from Texas A&M University –Commerce will be considered. Faculty and students are guided by the current undergraduate and graduate catalogs of the university as well as The Students Guidebook.

Faculty, Staff and Students will always be afforded due process and review as appropriate.

Grading Policy:

Grade Component	Points
Four Assignments (4*125)	500
Final Exam (Chapters 5-13)	500

Final grade in the course is the average from the student's total score from the sum of Assignments + Midterm + Final above.

<u>Average Range</u>	<u>Grade</u>
90%-100%	A
80%-89%	B
70%-79%	C
60%-69%	D
Below 60%	F

EXAMS SCHEDULE

Exams	Emailed on	To be emailed back on	Chapters Covered
Final Exam (Seven hrs)	Tuesday, October 16 th , 2012 at 5:00 pm	Tuesday, October 16 th , 2012 by 11:59 pm	5, 6, 7, 8, 9, 10, and 13

NOTE THE FOLLOWING:

1. Feel free to ask questions through **email**. I am accessible 24/7 through email even during weekends or holidays. You can ask any question related to the course topics and I try to answer them within few hours (maximum 24 hours).
2. This syllabus is tentative for the semester. It is meant to be a guide. Certain topics may be stressed more or less than indicated in the text books and, depending on class progress, certain topics may be omitted.
3. Homework problems are assigned and graded every 10 days. Solution to Assignment problems will be provided after the deadline for submission.
4. Missed examination: Missing Homework Assignment will result in zero score while missing the Final will result in grade "F". There will be no make-up Exam or make-up Assignment.
5. I provide detailed Instructions with examples for each Chapter in the class. I also provide power point slides for the chapters covered in the course.
6. Students are expected to:
 - a. Read text assignments as scheduled.
 - b. Read the chapter Instructions and the power point slides provided by the Professor.
 - c. Work the assigned homework problems independently. Submit the homework problems due as indicated in the appropriate drop box.
7. Demeanor: "All students enrolled at the university shall follow tenets of common decency and acceptable behavior conducive to a positive learning environment". See Students Guide Book.
8. Attendance Policy: I don't take attendance of graduate students. But regular class attendance is very important to excel in this course.
9. **Excel (2007)** will be used to solve problems along with calculator and formulas.

Topical Outline and Schedule of Assignments:

The schedule will depend on class progress; chapter assignments and tests may be altered as the class progresses. Students should read chapters and power point slides, and Instructions provided by the Professor.

Chapter	Designated Assignment Problems	Date/Due date	Chapter Goals
Chapter 1 What is Statistics		Aug 27 - Sept 6	<ol style="list-style-type: none"> 1. Understand why we study Statistics 2. Explain what is meant by <i>descriptive statistics</i> and <i>inferential statistics</i> 3. Distinguish between <i>qualitative</i> and <i>quantitative</i> variables 4. Describe how a <i>discrete</i> variable is different from a <i>continuous</i> variable 5. Distinguish among the <i>nominal</i>, <i>ordinal</i>, <i>interval</i>, and <i>ratio</i> levels of measurement.
Chapter 2 Describing Data: Frequency tables, Frequency Distributions, and Graphic Presentations		Aug 27 - Sept 6	<ol style="list-style-type: none"> 1. Organize <i>qualitative data</i> into a <i>frequency table</i>. 2. Present a frequency table as a <i>Bar Chart</i> or a <i>Pie Chart</i>. 3. Organize quantitative data into a <i>frequency distribution</i>. 4. Present a frequency distribution for quantitative data using <i>histograms</i>, <i>frequency polygons</i>, and <i>cumulative frequency polygons</i>.
Chapter 3 Describing Data: Numerical measures		Aug 27 - Sept 6	<ol style="list-style-type: none"> 1. Calculate the <i>arithmetic mean</i>, <i>weighted mean</i>, <i>median</i>, <i>mode</i>, and <i>geometric mean</i>. 2. Explain the characteristics uses, advantages, and disadvantages of each <i>measure of location</i>. 3. Identify the position of the <i>mean</i>, <i>median</i>, and <i>mode</i> for both <i>symmetric</i> and <i>skewed distributions</i>. 4. Compute and interpret the <i>range</i>, <i>mean deviation</i>, <i>variance</i>, and <i>standard deviation</i>. 5. Understand the characteristics, uses, advantages, and disadvantages of each <i>measure of dispersion</i>. 6. Understand <i>Chebyshev's theorem</i> and the <i>Empirical rule</i> as they relate to a set of observations.
Assignment 1 (Chapters 1, 2 and 3)	Will be emailed	Thursday, Sept 6th by 11:59 pm	
Chapter 5 A Survey of Probability Concepts		Sept 7- Sept 17	<ol style="list-style-type: none"> 1. Define probability. 2. Describe the <i>Classical</i>, <i>Empirical</i>, and <i>Subjective</i> approaches to probability. 3. Explain the terms <i>experiment</i>, <i>event</i>, <i>outcome</i>, <i>permutations</i>, and <i>combinations</i> 4. Define the terms <i>conditional probability</i> and <i>joint probability</i>. 5. Calculate probabilities using the <i>Rules of Addition</i> and the <i>Rules of Multiplication</i>. 6. Calculate the probability using <i>Bayes' Theorem</i>
Chapter 6 Discrete Probability Distributions		Sept 7- Sept 17	<ol style="list-style-type: none"> 1. Define probability distribution and random variable. 2. Differentiate between <i>discrete</i> and <i>continuous probability distributions</i>. 3. Calculate the mean, variance, and standard deviation of a discrete distribution. 4. Describe the characteristics and compute probabilities using the <i>binomial probability distribution</i> – use of tables and computer. 5. Describe the characteristics and compute probabilities using the <i>Poisson distribution</i> – use of tables.
Chapter 7 Continuous Probability Distributions		Sept 7- Sept 17	<ol style="list-style-type: none"> 1. Understand the difference between <i>discrete</i> and <i>continuous probability distributions</i>. 2. Understand the characteristics of the <i>normal probability distribution</i>. 3. Define and calculate Z values. 4. Determine the probability is between two points on a <i>normal probability distribution</i>. 5. Determine the probability an observation is above or below a point on a <i>normal probability distribution</i>. 6. Use the <i>normal probability distribution</i> to approximate the <i>binomial probability distribution</i>.
Assignment 2 (Chapters 5, 6, 7)	Will be emailed	Monday, Sept 17th by 11:59 pm	

Chapter 8 Sampling Methods and the Central Limit Theorem		Sept 18- Sept 28	<ol style="list-style-type: none"> 1. Explain why a <i>sample</i> is often the only feasible way to learn something about <i>population</i>. 2. Describe methods to select a <i>sample</i>. 3. Define and construct a <i>sampling distribution</i> of the sample mean. 4. Understand and explain the <i>central limit theorem</i>. 5. Use the central limit theorem to find probabilities of selecting possible sample means from a specified population.
Chapter 9 Estimation and Confidence Intervals		Sept 18- Sept 28	<ol style="list-style-type: none"> 1. Define a <i>point estimate</i>. 2. Define <i>level of confidence</i>. 3. Construct a <i>confidence interval</i> for a population mean when the <i>population standard deviation</i> is unknown: learn about <i>t-distribution</i>. 4. Construct a confidence interval for a <i>population proportion</i>. 5. Calculate the <i>required sample size</i> for either an <i>attribute or a variable</i>.
Chapter 10 One Sample Test of Hypothesis		Sept 29- Oct 9	<ol style="list-style-type: none"> 1. Define <i>Hypothesis</i> and <i>Hypothesis testing</i>. 2. Describe the <i>five step hypothesis-testing procedure</i>. 3. Distinguish between a <i>one-tailed</i> and a <i>two-tailed test of hypothesis</i>. 4. Conduct a hypothesis test regarding a population mean. 5. Conduct a test of hypothesis about a population proportion. 6. Define <i>Type I</i> and <i>Type II</i> errors.
Chapter 13 Linear Regression and Correlation		Sept 29- Oct 9	<ol style="list-style-type: none"> 1. Understand and interpret the terms independent and dependent variables. 2. Calculate and interpret <i>coefficient of correlation</i>, the <i>coefficient of determination</i> and the <i>standard error of the estimate</i>. 3. Calculate the least squares <i>regression line</i> and interpret the <i>slope</i> and <i>intercept values</i>. 4. Conduct <i>tests of significance</i> on the <i>regression coefficients</i>. 5. Learn about <i>prediction</i> of dependent variable using regression.
Assignment 3 (Chaps. 7 and 8)	Will be emailed	Friday, Sept 28th by 11:59 pm	
Assignment 4 (Chaps 10 & 13)	Will be emailed	Tuesday, Oct 9th by 11:59 pm	
Final Exam :Time limit 7 hours	Chapters 5, 6, 7, 8, 9, 10, and 13	Tuesday, Oct 16th, 2012 from 5 pm to 11:59 pm	

HOME WORK PROBLEMS TO BE TURNED IN- The Home Assignments are to be turned in by the **Midnight** of the due date also indicated on top each posted Assignment. **NO LATE SUBMISSION WILL BE ACCEPTED**

Chapters	Problem(s)	Due Date
Chapters 1-3	Assignment 1 (posted in the Announcement section)	Thursday, Sept 6th by 11:59 pm
Chapters 5-7	Assignment 2 (posted in the Announcement section)	Monday, Sept 17th by 11:59 pm
Chapters 8-9	Assignment 3 (posted in the Announcement section)	Friday, Sept 28th by 11:59 pm
Chapters 10 and 13	Assignment 4 (posted in the Announcement section)	Tuesday, Oct 9th by 11:59 pm