

**Eco 302-01-02W: Business and Eco Statistics [CRN # 21242 and 21243]  
Syllabus (Spring 2018): 1/16/2018 – 5/11/2018**

**Professor: Dr. Kishor Kumar Guru-Gharana**

**Office: BA 208**

**Office Hours: MWF 9:40 A.M. -11:00 A.M.; and TR 8:30-9:30 A.M. at BA 208**

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**Required Text:** D. A. Lind/W. G. Marchal/S. A. Wathen, Statistical Techniques in Business & Economics – McGraw Hill Irwin, 17e Year: 2018, ISBN: 9781259666360 (978-1-259-66636-0).

**Required Excel Training:** It is mandatory for every student of this course to take the Excel training. You must complete this training to get your Final grade. Here is the link:

<https://www.udemy.com/microsoft-excel-2013-from-beginner-to-advanced-and-beyond/>

**Course Description:** A course dealing with statistical concepts including measures of central tendency and dispersion, probability distributions, the Central Limit Theorem, sampling, estimation, hypothesis testing, correlation and regression analysis.

**Course Prerequisites:** Lvl U MATH 176 Min Grade C or Lvl U MATH 1325 Min Grade C

**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) Calculate and apply measures of location and measures of dispersion.
- 2) Apply discrete and continuous probability distributions to various business problems.
- 3) Understand the concepts of null and alternative hypotheses as well as the meaning of type I and type II errors; perform test of hypothesis as well as calculate confidence intervals.
- 4) Compute and interpret the results of Bivariate and Multivariate Regression and Correlation Analysis.
- 5) Use Excel for various Descriptive and Inferential Statistical tools.

**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](mailto: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.

### **Campus Concealed Carry**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to (<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

### **Grading Policy:**

<b>Grade Component</b>	<b>Points</b>
Two Home <b>ASSIGNMENTS</b> (2*250 = 500)	500
<b>Comprehensive Exam</b> (Chaps: 3, 5, 7, 8, 9, 10, and 13)	500

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

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

### **EXAMS SCHEDULE**

<b>Exams</b>	<b>Window period starts</b>	<b>Window period ends</b>	<b>Chapters Covered</b>
<b>Comprehensive Exam (7 hrs. time limit)</b>	<b>8 a.m. Saturday, May 5<sup>th</sup>, 2017</b>	<b>11:59 p. m. Tuesday, May 8<sup>th</sup>, 2017</b>	<b>3, 5,6,7, 8, 9, 10, and 13</b>

### **NOTE THE FOLLOWING:**

1. Feel free to ask questions through **email or Virtual Office Forum in e-college**. I am accessible 24/7 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 6-7 weeks. 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 Exams or make-up Assignments.
5. I provide detailed Instructions with examples for each Chapter in 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 through the respective drop-box in e-college by the due date/time.**
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: In the online course there is no class attendance. But assignments and tests have corresponding due dates.
10. **Excel** will be used to solve numerical 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 chapter Instructions provided by the Professor.

<b>Chapter</b>	<b>Modes of Instruction</b>	<b>Date/Due date</b>	<b>Chapter Goals</b>
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<u>Chapter 1</u> <b>What is Statistics</b>	Chapter notes/PPT slides and other materials uploaded in Doc Sharing of ecollege	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.
<u>Chapter 2</u> <b>Describing Data:</b> Frequency tables, Frequency Distributions, and Graphic Presentations	Class lectures/PPT slides/Handouts/email	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> .
<u>Chapter 3</u> <b>Describing Data:</b> Numerical measures	Class lectures/PPT slides/Handouts/email	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.
<u>Chapter 5</u> <b>A Survey of Probability Concepts</b>	Class lectures/PPT slides/Handouts/email	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>

<u>Chapter 6</u> <b>Discrete Probability Distributions</b>	Class lectures/PPT slides/Handouts/email		<ol style="list-style-type: none"> <li>1. Define probability distribution and random variable.</li> <li>2. Differentiate between <i>discrete and continuous probability distributions</i>.</li> <li>3 Calculate the mean, variance, and standard deviation of a discrete distribution.</li> <li>4. Describe the characteristics and compute probabilities using the <i>binomial probability distribution</i> – use of tables and computer.</li> <li>5. Describe the characteristics and compute probabilities using the <i>Poisson distribution</i> – use of tables.</li> </ol>
<u>Chapter 7</u> <b>Continuous Probability Distributions</b>	Class lectures/PPT slides/Handouts/email		<ol style="list-style-type: none"> <li>1. Understand the difference between <i>discrete and continuous probability distributions</i>.</li> <li>2. Understand the characteristics of the <i>normal probability distribution</i>.</li> <li>3. Define and calculate Z values.</li> <li>4. Determine the probability is between two points on a <i>normal probability distribution</i>.</li> <li>5. Determine the probability an observation is above or below a point on a <i>normal probability distribution</i>.</li> </ol>
<b>Assignment 1</b> <b>(Chapters 1, 2, 3, 5, 6 and 7)</b>	<b>Uploaded in e-college Doc Sharing</b>	<b>Sunday, March 4<sup>th</sup> by 11:59 pm</b>	
<u>Chapter 8</u> <b>Sampling Methods and the Central Limit Theorem</b>	Class lectures/PPT slides/Handouts/email		<ol style="list-style-type: none"> <li>1. Explain why a <i>sample</i> is often the only feasible way to learn something about <i>population</i>.</li> <li>2. <i>Describe methods to select a sample</i>.</li> <li>3. Define and construct a <i>sampling distribution</i> of the sample mean.</li> <li>4. Understand and explain the <i>central limit theorem</i>.</li> <li>5. Use the central limit theorem to find probabilities of selecting possible sample means from a specified population.</li> </ol>
<u>Chapter 9</u> <b>Estimation and Confidence Intervals</b>	Class lectures/PPT slides/Handouts/email		<ol style="list-style-type: none"> <li>1. Define a <i>point estimate</i>.</li> <li>2. Define <i>level of confidence</i>.</li> <li>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>.</li> <li>4. Construct a confidence interval for a <i>population proportion</i>.</li> <li>5. Calculate the <i>required sample size</i> for either an <i>attribute or a variable</i>.</li> </ol>
<b>Spring Break</b>		<b>March 12 to March 16</b>	
<u>Chapter 10</u> <b>One Sample Test of Hypothesis</b>	Class lectures/PPT slides/Handouts/email		<ol style="list-style-type: none"> <li>1. Define <i>Hypothesis</i> and <i>Hypothesis testing</i>.</li> <li>2. Describe the <i>five-step hypothesis-testing procedure</i>.</li> <li>3. Distinguish between a <i>one-tailed</i> and a <i>two-tailed</i></li> </ol>

			<i>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.
<u>Chapter 13</u> <b>Linear Regression and Correlation</b>	Class lectures/PPT slides/Handouts/email		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.
<b>Assignment 2</b>	<b>Uploaded in e-college Doc Sharing</b>	<b>Sunday April 22<sup>nd</sup> by 11:59 pm</b>	<b>Chapters 8, 9, 10, and 13</b>
<b>Final Exam: Time limit 7 hours once you start the test (single take and one stretch)</b>	<b>e-college</b>	<b>Window period starts at 8 a.m. Saturday, May 5<sup>th</sup> and ends at 11:59 p.m. on Tuesday, May 8<sup>th</sup></b>	<b>Chapters 3, 5, 7, 8, 9, 10, and 13</b>

**HOME WORK PROBLEMS TO BE TURNED IN- Dropbox by the Midnight of the due date on top of each posted Assignment. NO LATE SUBMISSION WILL BE ACCEPTED**

<u>Chapters</u>	<u>Problem(s)</u>	<u>Due Date</u>
<u>Chapters 1-7</u>	<u>Assignment 1 (Uploaded in e-college Doc Sharing)</u>	<u>Sunday, March 4<sup>th</sup> by 11:59 pm</u>
<u>Chapters 8-13</u>	<u>Assignment 2 (Uploaded in e-college Doc Sharing)</u>	<u>Sunday, April 22<sup>nd</sup> by 11:59 pm</u>