

**Eco 302-01E: Business and Eco Statistics [CRNs # 20727]
Syllabus (Spring 2020): 1/13/2020 – 5/8/2020**

Professor: Dr. Kishor Guru-Gharana

Office: BA 208

Office Hours: MWF 10:30 A.M. -Noon and TR 10:45- 11:45 A.M. at BA 208

Class Hours: MWF 12:00- 12:50 P.M. at BA 257

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Course Information

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).

Software Required: Excel with Analysis Tool Pack (installation of Analysis Tool Pack is free).

Recommended Excel Training: It is recommended for every student of this course to take the Excel training. I will give you 10 bonus points (added to your final total score out of 1000) if you submit the completion certificate through email to me before the end of the semester. Here is the link:

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

Please do not directly click on the link. You should copy it and paste (or type) on the address bar of your browser. If you try to click on the link directly it does not work.

Last semester it cost around \$ 15 for the completion of the course (you have to pay the required fee on your own). But it keeps changing a little every week. I strongly recommend completing this Excel training as early as you can and send me the completion certificate you receive from the training provider attached to an email (not through Dropbox or Doc Sharing).

Catalog Course Description: This course introduces students to descriptive statistics (measures of central tendency and variation and representing data graphically) and statistical inference. Inference will involve sampling techniques, estimation, hypothesis testing and simple regression. Applications emphasize continuous improvement of products and services.

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

Student Learning Outcomes:

By completing this course, the student will able to:

- 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 meaning of null and alternative hypotheses, type I and type II errors and to perform test of hypothesis including Z and t-tests.

- 4) Calculate confidence interval for a population parameter for mean and proportions.
- 5) Compute and interpret the results of Bivariate Regression and Correlation Analysis.
- 6) Interpret regression results generated by a computer software.

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.

<p>3.Understand Hypothesis Testing:</p> <p>3.1 Understand the meaning of a null and an alternative hypothesis</p> <p>3.2 Understand the meaning of type I and type II error.</p> <p>3.3 Be able to perform test of hypothesis</p> <p>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.</p>	<p>3.1 Student doesn't understand the meaning of a null and an alternative hypothesis</p> <p>3.2 Student doesn't understand the meaning of type I and type II error.</p> <p>3.3 Student cannot perform test of hypothesis</p> <p>3.4 Student cannot calculate confidence interval for a population parameter for a single mean, including use of the t and the z test</p>	<p>3.1 Student understands the meaning of a null and an alternative hypothesis or</p> <p>3.2 Student understands the meaning of type I and type II error.</p> <p>3.3 Student is able to perform some test of hypothesis or</p> <p>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)</p>	<p>3.1 Student understands the meaning of a null and an alternative hypothesis or</p> <p>3.2 Student understands the meaning of type I and type II error.</p> <p>3.3 Student is able to perform some test of hypothesis or</p> <p>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)</p>	<p>3.1 Student understands the meaning of a null and an alternative hypothesis and</p> <p>3.2 Student understands the meaning of type I and type II error. and</p> <p>3.3 Student is able to perform some test of hypothesis and</p> <p>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</p>
<p>4. Compute and interpret the results of Bivariate Regression and Correlation Analysis.</p>	<p>Student cannot compute and interpret the results of Bivariate Regression and Correlation Analysis.</p>	<p>Student can compute and interpret some of the results of Bivariate Regression and Correlation Analysis.</p>	<p>Student can compute and interpret most of the results of Bivariate Regression and Correlation Analysis.</p>	<p>Student can compute and interpret all of the results of Bivariate Regression and Correlation Analysis.</p>

5. Be able to interpret regression results generated by computer software.	Student cannot interpret regression results generated by a computer software	Student can fairly interpret regression results generated by a computer software	Student can interpret regression results generated by a computer software well	Student can interpret regression results generated by a computer software excellently
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Course Requirements

Minimal Technical skills Needed

High school algebra; using Excel spreadsheet, Excel functions and Excel graphics; and using PowerPoint.

Instructional Methods: The professor/instructor will provide chapter notes/instructions through class lectures, and through D2L Brightspace Content and/or emails. Moreover, the Professor will provide power point slides with solved examples and explanations in D2L Brightspace. Questions can be asked through email or in class.

Student Responsibilities/Tips for Success in the Course

1. Students are expected to:
 - a. Read text assignments as scheduled.
 - b. Read the chapter Instructions provided by the Professor.
 - c. Work the assigned homework problems independently. Submit the homework problems due as indicated in the appropriate drop box of D2L Brightspace.
 - d. Read the regular announcements in the Announcement section of the D2L Brightspace and download the posted materials with download links.
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 textbook depending on class progress, and certain topics may be omitted.
3. Homework problems are assigned and graded every six weeks. Solution to Assignment problems will be provided after the deadline for submission.
5. I provide detailed Instructions with examples for each Chapter.
6. You must show your work in Essay type (or Written response) questions to receive full points. You only need to mark the correct answer in T/F and MC questions.
7. Feel free to ask questions through email or other online tools. I am accessible 24/7 through these channels even during weekends or holidays. You can ask any question related to the course topics and I try to answer them within few hours (usually within 24 hours).
8. 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.

9. Attendance Policy: Class attendance will be taken in every class. Regularity and punctuality in class attendance is highly correlated with your performance in this course. Moreover, you lose one point for every unexcused absence. Those students who have no more than two absences in the whole semester will earn 5 bonus points.

Grading

Grade Component	Points
Two Assignments (2*250)	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 + Final) above.

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

EXAMS SCHEDULE

Exams	Window Period starts*	Window Period ends**	Chapters Covered
Final Exam (Seven hrs.)	Morning of Friday, May 1st, 2020	Midnight of Tuesday, May 6th, 2020	5,6,7,8,9,10 and 13

*Uploading will be done in the morning (8 a.m.) of the starting date. The Final has a five-days' window period with time limit once you start the tests. It has a Seven-hour time limit. The Exam is a one-take Exam. That is, you must finish the Exam in a single take.

**Mid-night (11:59 p.m.) of the Last Date. Start at least 7 hours earlier than 11:59 p.m. of the last date for the Final. Once the time passes 11:59 p.m. of the last date or you have spent the given time limit for the test (whichever comes first), the system will kick you out of the test. So, be very careful about the time remaining while taking the test.

MyLeo Support

Your myLeo email address is required to send and receive all student correspondence. Please email helpdesk@tamuc.edu or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at [myLeo](https://leo.tamuc.edu). <https://leo.tamuc.edu>

Learner Support

The [One Stop Shop](http://www.tamuc.edu/admissions/onestopshop/) was created to serve you by providing as many resources as possible in one location. <http://www.tamuc.edu/admissions/onestopshop/>

The [Academic Success Center](http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/) provides academic resources to help you achieve academic success. <http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/>

COMMUNICATION AND SUPPORT Interaction with Instructor Statement

I generally respond to email questions within 24 hours

Course Specific Procedures/Policies

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.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette http://www.albion.com/netiquette/corerules.html](http://www.albion.com/netiquette/corerules.html)

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

ADA Statement

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 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from

Campus Concealed Carry Statement

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 the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

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.

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.

Chapter	Modes of Instruction	Date/Due date	Chapter Goals
<u>Chapter 1</u> What is Statistics	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Jan 13-17	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, ordinal, interval, and ratio</i> levels of measurement.
<u>Chapter 2</u> Describing Data: Frequency tables, Frequency Distributions, and Graphic Presentations	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Jan 20-24	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, frequency polygons, and cumulative frequency polygons</i> .

Chapter 3 Describing Data: Numerical measures	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Jan 27- Feb 7	<ol style="list-style-type: none"> Calculate the <i>arithmetic mean, weighted mean, median, mode, and geometric mean</i>. Explain the characteristics uses, advantages, and disadvantages of each <i>measure of location</i>. Identify the position of the <i>mean, median, and mode</i> for both <i>symmetric</i> and <i>skewed distributions</i>. Compute and interpret the <i>range, mean deviation, variance, and standard deviation</i>. Understand the characteristics, uses, advantages, and disadvantages of each <i>measure of dispersion</i>. Understand <i>Chebyshev's theorem</i> and the <i>Empirical rule</i> as they relate to a set of observations.
Chapter 5 A Survey of Probability Concepts	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Feb 10- 14	<ol style="list-style-type: none"> Define probability. Describe the <i>Classical, Empirical, and Subjective</i> approaches to probability. Explain the terms <i>experiment, event, outcome, permutations, and combinations</i> Define the terms <i>conditional probability and joint probability</i>. Calculate probabilities using the <i>Rules of Addition</i> and the <i>Rules of Multiplication</i>. Calculate the probability using <i>Bayes' Theorem</i>
Chapter 6 Discrete Probability Distributions	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Feb 17-21	<ol style="list-style-type: none"> Define probability distribution and random variable. Differentiate between <i>discrete and continuous probability distributions</i>. Calculate the mean, variance, and standard deviation of a discrete distribution. Describe the characteristics and compute probabilities using the <i>binomial probability distribution</i> – use of tables and computer. Describe the characteristics and compute probabilities using the <i>Poisson distribution</i> – use of tables.
Chapter 7 Continuous Probability Distributions	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	Feb 24-28	<ol style="list-style-type: none"> Understand the difference between <i>discrete and continuous probability distributions</i>. Understand the characteristics of the <i>normal probability distribution</i>. Define and calculate Z values. Determine the probability is between two points on a <i>normal probability distribution</i>. Determine the probability an observation is above or below a point on a <i>normal probability distribution</i>.

Assignment 1 (Chapters 1, 2, 3, 5, 6 and 7)	Emailed and/or provided through D2L Brightspace	Sunday, March 1st by 11:59 pm	Submit though D2L Brightspace
<u>Chapter 8</u> Sampling Methods and the Central Limit Theorem	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	March 2-6	<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. <i>Describe methods to select a 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.
<u>Spring</u>	Break	March 9-13	
<u>Chapter 9</u> Estimation and Confidence Intervals	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	March 16-20	<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>.
<u>Chapter 10</u> One Sample Test of Hypothesis	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	March 23-April 3	<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.
<u>Chapter 13</u> Linear Regression and Correlation	Chapter notes/PPT slides/Handouts through Live classes or D2L Brightspace and emails	April 6-17	<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 2	Uploaded in D2L Brightspace and/or emailed	Sunday, April 19th by 11:59 pm	Chapters 8, 9, 10, and 13
Final Exam: Time limit 7 hours once you start the test (single take and one stretch)	Through D2L Brightspace Activities/Quiz/Exam section	Window period: 8 a.m. of Friday, May 1st till 11:59 p.m. of Tuesday, May 6th.	Chapters: 5, 6, 7, 8, 9, 10, and 13

HOME WORK PROBLEMS TO BE TURNED IN- Submission folder of D2L Brightspace 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 D2L Brightspace)</u>	<u>Sunday, March 1st by 11:59 pm</u>
<u>Chapters 8-13</u>	<u>Assignment 2 (Uploaded in D2L Brightspace)</u>	<u>Sunday, April 19th by 11:59 pm</u>