



College of Business
Eco 302-81E: Business and Eco statistics [CRN 25220]
Syllabus (Spring 2022): 1/12/2022- 5/13/2022

Professor: Dr. Kishor Guru-Gharana
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Preferred Form of Communication: email (24/7 during semester)
Communication Response Time: within 24 hours
Class Hours: MW 1:00 pm -2:15 pm at DAL 2036
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Note about Counseling Center

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Course Information

Required Text: Statistics for Business and Economics (ISBN: 9781774125595) by Dr. Kishor Guru-Gharana published by TopHat in December 2020. We will be using Top Hat Pro (www.tophat.com) to access the digital interactive textbook, Statistics for Business and Economics (ISBN: 9781774125595), that we will be using in this class for teaching and Assignments. The join code for this course is 691407.

Subscriptions to purchase: Top Hat Pro and Top Hat Textbook

For instructions on how to create a Top Hat account and enroll in Top Hat Pro course, please refer to one of the following resources:

- ***1) The invitation sent to your school email address OR***
- ***2) Consult [Top Hat's Getting Started Guide](#) OR***
- ***3) Get started with this [2 minute video walkthrough](#)***

If you already have a Top Hat account, go to <https://app.tophat.com/e/691407> to be taken directly to our course. If you are new to Top Hat, follow the link in the email invitation you received or

- ***Go to <https://app.tophat.com/register/student>***

- Click "Search by school" and input the name of our school
- Search for our course with the following join code: 691407

The cost of the textbook is \$45 and will be applied at checkout when enrolling in the Top Hat course. Bear in mind that textbook material will be made available in our course throughout the semester once your professor assigns it to the class, so do not panic if you do not see any content in the course upon entry.

Should you require assistance with Top Hat at any time please contact their Support Team directly by way of email (support@tophat.com), the in-app support button, or by calling 1-888-663-5491. Specific user information may be required by their technical support team when troubleshooting issues.

Please note that the total cost for Top Hat Pro and my Textbook is less than one-third of the price of Textbook which was used in previous semesters. If you already have Top Hat subscription, then the cost drops by \$25 to a total of \$45 for the Textbook only.

This textbook also has several embedded videos in each chapter to help students understand the topics and solve the problems. The Assignment questions are stacked at the end of the chapters and are graded by TopHat except for the essay type (long answer) questions.

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

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.

Student Learning Outcomes:

By completing this course, the student will be 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 (2 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 conduct live classes and occasional Zoom classes depending on topic (during class hours). If zoom classes are held the chapter notes and videos are uploaded in D2L Brightspace Content. Moreover, the Professor will provide power point slides with solved examples and explanations in D2L Brightspace. Questions can be asked through email or in Zoom classes.

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 in Class/Zoom classes and in the Textbook and learn from the embedded videos and solved examples in the Textbook.
 - c. Work the assigned homework problems independently. Submit the homework problems through TopHat. Top Hat will grade your True/False and Multiple choices type questions. I will grade the essay type questions (about one or two essay type per chapter).
 - 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 two to three weeks. Two chapters are covered in each assignment. Solutions to Assignment problems will be provided after the grading.
5. I provide detailed Instructions with examples for each Chapter.
6. You must show your work in Essay type (long answers 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: Attendance is optional but improves your performance. I encourage not to miss the Zoom classes too.

Grading

Grade Component	Points
Five Assignments	600 conducted through Top Hat
Final Exam (Chapters 3-12)	400 (conducted through D2L)
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 hours maximum time limit)	Morning of Monday, May 9th, 2022	Midnight of Thursday, May 12th, 2022	3,4,5,6,7,8,9, and 12

*Uploading will be done in the morning (8 a.m.) of the starting date. The Final has a four-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 extra careful about the time remaining while taking the test.

The final Exam is accessed through D2L Brightspace following Activities/Quiz/Exam route. The Assignments are accessible through Activities/assignment route in D2L for Essay type and through TopHat for MC and T/F questions.

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>

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).

<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 Learning Objectives
Chapter 1 Introduction	Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails	Assignment 1 covering Chapters 1 and 2 due by Midnight of Sunday, January 30 th , 2022	<ul style="list-style-type: none"> Understand and be able to explain the importance of learning Statistics Understand the ethical and legal issues involved in using Statistics and be able to avoid the pitfalls in the application of Statistical tools Be able to enlist the various tasks involved in Statistics and the main branches of Statistics Be able to define the standard Statistical terms such as Population, Sample, Census, Random sample, Simple Random Sample, etc. Understand the different levels of measurement and be able to identify which level of measurement a given value belongs to Understand the difference between Discrete and continuous quantitative variables

<p><u>Chapter 2</u> Presenting Data in Graphs and Table</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 1 covering Chapters 1 and 2 due by Midnight of Sunday, January 30th, 2022</p>	<ul style="list-style-type: none"> • Be able to Plot Bar Chart and Pie Chart for Qualitative Data • Be able to form Grouped Data and plot Histogram, Frequency Polygon, and Ogive for Quantitative Data using Excel • Learn how to use the 2^k rule for determining number of classes • Be able to construct Frequency Tables with Relative Frequency and cumulative Frequency columns • Be able to plot Scatter Plot for Two variables
<p><u>Chapter 3</u> Summary Statistics of Probability Distributions</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 2 covering Chapters 3 and 4 due by Midnight of Sunday, Feb 20th, 2022</p>	<ul style="list-style-type: none"> • Understand the four Key Characteristics of a Probability Distribution • Be able to calculate Mean, Median and Mode for grouped and ungrouped data and understand the strengths and weaknesses of these measures of the Central Tendency • Be able to calculate Variance and Standard Deviation from sample data • Understand and be able to apply the Empirical rules • Understand the Chebyshev's rule and its limitations • Understand and be able to calculate Z-scores and Coefficient of Variation
<p><u>Chapter 4</u> Probability Concepts and Rules</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 2 covering Chapters 3 and 4 due by Midnight of Sunday, Feb 20th, 2022</p>	<ul style="list-style-type: none"> • Understand the Concepts of Experiment, Sample Space and Probability • Learn the three Basic probability rules and the three Approaches to Assigning Probability • Understand the concepts of Union and Intersection of events • Be able to apply rules of Addition for mutually Exclusive and not Mutually Exclusive events • Be able to apply rules of Multiplication of Probability for Independent and dependent events • Be able to calculate probabilities based on contingency tables • Understand and be able to calculate revised probabilities using the Bayesian rule

<p><u>Chapter 5</u> The Binomial Distribution</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 3 covering Chapters 5 and 6 due by midnight of Sunday, March 13th, 2022</p>	<ul style="list-style-type: none"> • Understand the concepts of Random variables and Probability distributions • Understand the concept of Bernoulli Trials • Learn the Essential conditions for a Binomial distribution • Learn the Properties of a Binomial distribution • Be able to apply formulas and Binomial Tables to solve numerical problems related to Binomial Distribution • Be able to use Excel to solve numerical problems related to Binomial distribution
<p><u>Chapter 6</u> Continuous Probability Distributions: Normal Distributions</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 3 covering Chapters 5 and 6 due by midnight of Sunday, March 13th, 2022</p>	<ul style="list-style-type: none"> • Understand the key features of a continuous probability distribution • Learn the Characteristics of a Normal distribution • Be able to use the Standard Normal or Z-Table • Be able to solve numerical probability questions based on a Normal distribution • Be able to use Excel to solve numerical problems based on a Normal distribution
<p><u>Spring Break</u></p>		<p>March 14 - 18</p>	<ul style="list-style-type: none"> •
<p><u>Chapter 7</u> Sampling Distributions of Sample Means and Proportions</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 4 covering Chapters 7 and 8 due by Sunday, April 10th, 2022</p>	<ul style="list-style-type: none"> • Understand the reasons for sampling • Understand why Sample Statistics are random variables • Understand the properties of the Sampling Distribution of the Sample Mean • Understand the properties of the Sampling Distribution of the Sample Proportion • Learn how to Calculate the Standard errors for the Sample Mean and the Sample Proportion • Be able to solve numerical problems related to the sampling distributions of the Sample Mean and the Sample Proportion

<p><u>Chapter 8</u> Confidence Intervals for Mean and Proportion</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 4 covering Chapters 7 and 8 due by Sunday, April 10th, 2022</p>	<ul style="list-style-type: none"> • Understand why confidence Interval estimation is more realistic than a point estimate • Be able to calculate Confidence Intervals for the Sample mean with known Population Variance • Be able to calculate Confidence Intervals for the Sample Mean with unknown Population Variance • Be able to find the Required Minimum Sample Size for a specified Threshold of Error in the case of mean and Proportion • Be able to calculate the Confidence Intervals for the Sample Proportion • Be able to use Excel in solving numerical problems related to Confidence Intervals
<p><u>Chapter 9</u> Hypothesis Testing: Single Sample</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 5 covering Chapters 9 and 12 due by Sunday, May 1st, 2022</p>	<ul style="list-style-type: none"> • Understand the Concepts of Null and Alternative hypothesis, and One-tailed and Two-tailed tests • Understand the concepts of Type I and Type II errors • Be able to apply the Critical value and p-value Approaches in solving numerical problems related to Z-test for the Mean when Population Variance is known • Be able to apply the Critical value and p-value approaches in solving numerical problems related to t-test for the Mean when Population Variances are not known • Be able to perform Z-test in solving problems related to Proportions with large samples
<p><u>Chapter 12</u> Bivariate Linear Regression Analysis</p>	<p>Class lectures + Zoom classes + PPT slides/Handouts and other materials uploaded in D2L + emails</p>	<p>Assignment 5 covering Chapters 9 and 12 due by Sunday, May 1st, 2022</p>	<ul style="list-style-type: none"> • Be able to examine the relationship between two variables using the Scatter Diagram, Covariation, Covariance, and Coefficient of Correlation • Understand the underlying Bivariate Classical Linear Regression Model Assumptions including Unbiasedness, Homoscedasticity and No-Autocorrelation • Be able to apply the Ordinary Least Squares formulas to estimate a bivariate linear regression line (Equation) and perform predictions based on the estimated Regression Equation

			<ul style="list-style-type: none"> • Be able to Interpret the Regression Coefficients and the Overall Explanatory Power of the Model • Be able to apply t-test for the significance of the Regression Coefficients • Be able to use Excel for Bivariate Regression Analysis
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: From 8 a.m. of Monday, May 9th, to 11:59 p.m. of Thursday, May 12th, 2022	Chapters: 3, 4, 5, 6, 7, 8, 9, and 12

HOME WORK PROBLEMS TO BE TURNED IN- NO LATE SUBMISSION WILL BE ACCEPTED

<u>Chapters</u>	<u>Problem(s)</u>	<u>Due Date</u>
<u>Chapters 1-2</u>	<u>Assignment 1 (Accessible in TopHat)</u>	<u>By 11.59 P.M. of Sunday, January 30th</u>
<u>Chapters 3-4</u>	<u>Assignment 2 (Accessible in TopHat)</u>	<u>By 11.59 P.M. of Sunday, February 20th</u>
<u>Chapters 5-6</u>	<u>Assignment 3 (Accessible in TopHat)</u>	<u>By 11.59 P.M. of Sunday, March 13th</u>
<u>Chapters 7-8</u>	<u>Assignment 4 (Accessible in TopHat)</u>	<u>By 11.59 P.M. of Sunday, April 10th</u>
<u>Chapters 9 and 12</u>	<u>Assignment 5 (Accessible in TopHat)</u>	<u>By 11.59 P.M. of Sunday, May 1st</u>

Should you require further assistance, our Support Team is here to help! You can contact us directly by way of email (support@tophat.com), the Contact Support button on this page, or calling us at 1-888-663-5491.