TRINE UNIVERSITY

Course Syllabus

Course Title: Statistics and Quantitative Methods **Term and Year:**

Course and Section Number: BA 6933 **Time and Place:**

Number of Credit Hours: 3

Instructor: **Office Location/Hours:**

Office Phone: **Email:**

Course Description:

Throughout this course, students will examine statistical tools and techniques. This course presents an overview of the various primary and secondary research methodologies used in the business world. Students will apply statistical techniques to business strategies. This course will be business oriented providing students with business examples and cases studies.

Learning Outcomes: Upon completion of this course, the student should be able to:

1. Analyze descriptive statistics presented in tabular, graphical, and numerical form.
2. Calculate discrete and continuous probabilities.
3. Determine probability distributions and interval estimations from sample/population data.
4. Formulate inferential conclusions using hypothesis testing, experimental design, chi-square analysis, and analysis of variation statistical methods.
5. Solve business problems using simple, multiple, and logistic regression analysis.
6. Develop time series and forecasting models.

Prerequisites: None.

Required Text:

Option 1

MindTap for Anderson/Sweeney/Williams/Camm/Cochran/Fry/Ohlmann's for Modern Business Statistics with Microsoft® Excel®, 7th Edition, 1 term
PAC 9780357131510
IAC 9780357131503

Option 2

Cengage Unlimited
4 MO IAC 9780357700006 4

References:

Other Materials:

Course Requirements:

Attendance/Participation: All students are expected to log in to their courses regularly throughout the week to receive instruction, materials, and updates from the instructor. It is your responsibility to check in and submit your assignments, complete your discussion board postings, and finish quizzes and exams by the due dates.

If you do not participate in the course, you will be counted absent. Simply logging in is not enough; you must submit/complete an assignment, post to a discussion board, or other similar assignment tasks to avoid being counted absent. Instructors are required to submit attendance the Monday following each week of class.

This attendance is reported to the Financial Aid Department and may result in the loss of any financial aid refund you are expecting if you have not been participating in your courses. **In addition, you will be administratively dropped from the course if you are reported absent a total of three weeks.**

Indicate your class attendance policy. (Remember that for Trine University to receive federal financial aid for its students, faculty are expected to take roll and be able to verify when students are and are not attending class.)

Grading/Evaluation:

Trine Graduate Grading Scale:

Grade	Percentage	Quality Points	Meaning of Grade
A	93-100	4.0	Excellent
B+	87-92	3.5	Very Good
B	81-86	3.0	Good
C+	75-80	2.5	Above Average
C	70-74	2.0	Average (lowest passing grade)
F	00-69	0.0	Failure
S	Satisfactory	Not figured into GPA	
U	Unsatisfactory	Not figured into GPA	
I	Incomplete	Not figured into GPA	
IP	In Progress (grade deferred)	Not figured into GPA	
W	Withdrawal	Withdrawal before completion of 80% of semester	

WP	Withdrawal	Withdrawal after completion of 80% of semester issued only under special circumstances and with approval of the department chair/director	

Grade Distribution

Discussion forums (8)	10%
Chapter Assignments (19)	20%
End of Chapter Quizzes (19)	20%
Exam (2)	50%

Other Policies: You may wish to indicate policies such as the consequences of academic misconduct, methods of communication, student expectations, instructor expectations and any other policy that needs to be clarified at the beginning of the course.

Academic Misconduct:

The University prohibits all forms of academic misconduct. Academic misconduct refers to dishonesty in examinations (cheating), presenting the ideas or the writing of someone else as one's own (plagiarism) or knowingly furnishing false information to the University by forgery, alteration, or misuse of University documents, records, or identification. Academic dishonesty includes, but is not limited to, the following examples: permitting another student to plagiarize or cheat from one's own work, submitting an academic exercise (written work, printing, design, computer program) that has been prepared totally or in part by another, acquiring improper knowledge of the contents of an exam, using unauthorized material during an exam, submitting the same paper in two different courses without knowledge and consent of professors, or submitting a forged grade change slip or computer tampering. The faculty member has the authority to grant a failing grade in cases of academic misconduct as well as referring the case to Student Life.

Plagiarism:

You are expected to submit your own work and to identify any portion of work that has been borrowed from others in any form. An ignorant act of plagiarism on final versions and minor projects, such as attributing or citing inadequately, will be considered a failure to master an essential course skill and will result in an F for that assignment. A deliberate act of plagiarism, such as having someone else do your work, or submitting someone else's work as your own (e.g., from the Internet, fraternity file, etc., including homework and in-class exercises), will at least result in an F for that assignment and could result in an F for the course.

Artificial Intelligence (AI) is prohibited: All work submitted by students in this course must be generated by the student. Students may not have another person or entity contribute to an assignment for them, which includes using AI. Students may not incorporate any part of an AI-generated response in an assignment, use AI to formulate arguments, use AI to generate ideas for an assignment, or submit work to an AI platform for improvement. Using an AI tool to generate content may qualify as academic misconduct in this course.

OR

Artificial Intelligence (AI) is allowed: Students may use AI tools on instructor-identified assignments in this course. To adhere to our scholarly values, students must cite any AI-generated material that informed their work. Using an AI tool without proper attribution may qualify as academic misconduct in this course. It is the responsibility of the student to verify the accuracy, reliability, and ethical implications of AI-generated content.

Electronic Devices:

Use of electronic devices including smart watches and cell phones is prohibited during exams or quizzes unless directly allowed by the instructor.

Additional Information: You may wish to include other information here. Include information that you would repeat in lessons, practices, policies, etc.

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Course Mapping

BA 6933 Statistics and Quantitative Methods

Course Description: Throughout this course, students will examine statistical tools and techniques. This course presents an overview of the various primary and secondary research methodologies used in the business world. Students will apply statistical techniques to business strategies. This course will be business oriented providing students with business examples and cases studies.

Learning Outcomes:

1. Analyze descriptive statistics presented in tabular, graphical, and numerical form. **(LO1)**
2. Calculate discrete and continuous probabilities. **(LO2)**
3. Determine probability distributions and interval estimations from sample/population data. **(LO3)**
4. Formulate inferential conclusions using hypothesis testing, experimental design, chi-square analysis, and analysis of variation statistical methods. **(LO4)**
5. Solve business problems using simple, multiple, and logistic regression analysis. **(LO5)**
6. Develop time series and forecasting models. **(LO6)**

Week One: LO1	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 1: Data and Statistics (23 pages) **(LO1)** • Chapter 2: Descriptive Statistics – Tabular and Graphical Displays (37 pages) **(LO1)** • Chapter 3: Descriptive Statistics: Numerical Measure (48 pages) **(LO1)** Watch: • What is Descriptive Statistics ... [Examples and Concept - Mean Median Mode] (7:21 mins) **(LO1)**	Participate: • Discussion Forum: During the first week of class, take some time to introduce yourself to classmates**;** **Name/Nickname:** Tell us your name and, if you have a nickname, let us know what you like to go by. **Three Faves:** Pick three of the following and share your favorites with classmates. Once you have posted your favorites, respond to at least 2 classmates. Favorite movie/actor; Favorite song/singer; Favorite book/author; Favorite YouTuber/Instagrammer; Favorite pet/animal; Favorite sports team/athlete. Last, express yourself in descriptive numbers. For example, you might say, I am 50% sarcastic, 25% over-thinking, and 25% asleep at all times. Have fun with this. • Discussion Forum: Find an example of descriptive statistics applied in business. Post your example and discuss its inferences. **(LO1)** Assignments: • MindTap chapter1 assignment – Data and Statistics **(LO1)** • MindTap chapter 2 assignment - Descriptive Statistics: Tabular and Graphical Displays **(LO1)** • MindTap chapter 3 assignment - Descriptive Statistics: Numerical Measure **(LO1)** • MindTap chapter 1 quiz - Data and Statistics **(LO1)** • MindTap chapter 2 quiz - Descriptive Statistics – Tabular and Graphical Displays **(LO1)** • MindTap chapter 3 quiz - Descriptive Statistics: Numerical Measure **(LO1)**
Week Two: LO2	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 4: Introduction to Probability (30 pages) **(LO2)** • Chapter 5: Discrete Probability Distributions (31 pages) **(LO2)** • Chapter 6: Continuous Probability Distributions (41 pages) **(LO2)** Watch: • Discrete Probability Distributions (11:28mins) **(LO2)** Continuous Probability Distributions - Basic Introduction (10:12mins) **(LO2)**	Participate: • Discussion Forum: Create and post an infographic that contrasts discrete probabilities and continuous probabilities. Discuss your infographic. **(LO2)** Assignments: • MindTap chapter 4 assignment – Introduction to Probability **(LO2)** • MindTap chapter 5 assignment – Discrete Probability Distributions **(LO2)** • MindTap chapter 6 assignment – Continuous Probability Distributions **(LO2)** • MindTap chapter 4 quiz - Introduction to Probability **(LO2)** • MindTap chapter 5 quiz - Discrete Probability Distributions **(LO2)** • MindTap chapter 6 quiz - Continuous Probability Distributions **(LO2)**
Week Three: Overview LO3,4	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 7: Sampling and Sample Distributions (35 pages) **(LO3)** • Chapter 8: Interval Estimations (30 pages) **(LO3)** • Chapter 9: Hypothesis Tests (33 pages) **(LO4)** Watch: • Sampling Distribution - Central Limit Theorem - Normal Distribution (3:10mins) **(LO3)** • Understanding Confidence Intervals: Statistics Help (4:02mins) **(LO3)** • Hypothesis testing: step-by-step, p-value, t-test for difference of two means - Statistics Help (7:37mins) **(LO4)**	Participate: • Discussion Forum: Create and post an infographic that compares and relates sampling distributions to interval estimation to hypothesis testing. Discuss your infographic. **(LO3) (LO4)** Assignments: • MindTap chapter 7 assignment – Sampling and Sample Distributions **(LO3)** • MindTap chapter 8 assignment – Interval Estimations **(LO3)** • MindTap chapter 9 assignment – Hypothesis Tests **(LO4)** • MindTap chapter 7 quiz - Sampling and Sample Distributions **(LO3)** • MindTap chapter 8 quiz - Interval Estimations **(LO3)** • MindTap chapter 9 quiz - Hypothesis Tests **(LO4)**
Week Four: LO4	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 10: Inference About Means and Proportions with Two Populations (30 pages) **(LO4)** • Chapter 11: Inference About Population Variances (20 pages) **(LO4)** • Chapter 12: Tests of Goodness of Fit, Independence, and Multiple Proportions (25 pages) **(LO4)** Watch: • Hypothesis Testing - Difference of Two Means - Student's -Distribution & Normal Distribution (18:32mins) **(LO4)** Chi Square Test (6:43mins) **(LO4)**	Participate: • Discussion Forum: In your post, 1) Discuss why a Test of Goodness of Fit is important. Provide examples to support your discussion and 2) explain Chi-Square and its uses. Provide examples to support your discussion. **(LO4)** Assignments: • MindTap chapter 10 assignment – Inference About Means and Proportions with Two Populations **(LO4)** • MindTap chapter 11 assignment – Inference About Population Variances **(LO4)** • MindTap chapter 12 assignment – Tests of Goodness of Fit, Independence, and Multiple Proportions **(LO4)** • MindTap chapter 10 quiz - Inference About Means and Proportions with Two Populations **(LO4)** • MindTap chapter 11 quiz - Inference About Population Variances **(LO4)** • MindTap chapter 12 quiz - Tests of Goodness of Fit, Independence, and Multiple Proportions **(LO4)** • MindTap Exam 1 over chapters 1 – 9 **(LO1) (LO2) (LO3) (LO4)**
Week Five: LO4,5	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 13: Experimental Design and Analysis of Variance (39 pages) **(LO4)** • Chapter 14: Simple Linear Regression (50 pages) **(LO5)** Watch: • Understanding Analysis of Variance (ANOVA) including Excel - Statistics Help (6:04mins) **(LO4)** Simple Linear Regression Example (14:55mins) **(LO5)**	Participate: • Discussion Forum: Create and post an infographic that explains simple linear regression. Discuss your infographic. **(LO5)** Assignments: • MindTap chapter 13 assignment – Experimental Design and Analysis of Variance **(LO4)** • MindTap chapter 14 assignment – Simple Linear Regression **(LO4)** • MindTap chapter 13 quiz - Experimental Design and Analysis of Variance **(LO4)** MindTap chapter 14 quiz - Simple Linear Regression **(LO5)**
Week Six: LO5	
Learning Activities and Materials	**Assessments**
Read: Modern Business Statistics • Chapter 15: Multiple Regression (33 pages) **(LO5)** • Chapter 16: Regression Analysis – Model Building (30 pages) **(LO5)** Watch: • Statistics 101: Multiple Linear Regression, The Very Basics (20:25mins) **(LO5)** • Statistics 101: Model Building, GLM Relationships Between ANOVA and Linear Regression (24:57mins) **(LO5)**	Participate: • Discussion Forum: Complete the case problem, "Rating wines from the Piedmont region of Italy" located at the end of chapter 16. Upload your report and discuss your findings and recommendations. Then study and comment on two of your classmates' post **(LO5)** Assignments: • MindTap chapter 15 assignment – Multiple Regression **(LO4)** • MindTap chapter 16 assignment – Regression Analysis: Model Building **(LO4)** • MindTap chapter 15 quiz - Multiple Regression **(LO4)** MindTap chapter 16 quiz - Regression Analysis: Model Building **(LO5)**
Week Seven: LO6	
Learning Activities and Materials	**Assessments**

Read: Modern Business Statistics • Chapter 17: Time Series Analysis and Forecasting (50 pages) **(LO6)** • Chapter 18: Nonparametric Methods (27 pages) **(LO6)** Watch: • Statistics Lecture Time Series Analysis and Forecasting (21:07mins) **(LO6)** Statistics 101: Introduction to Nonparametric Methods and Sign Test (15:38mins) **(LO6)**	Participate: • Discussion Forum: Complete the case problem, "Forecasting Food and Beverage Sales" located at the end of chapter 17. Upload your report and discuss your findings and recommendations. Then study and comment on two of your classmates' post **(LO6)** Assignments: • MindTap chapter 17 assignment – Time Series Analysis and Forecasting **(LO4)** • MindTap chapter 18 assignment – Nonparametric Methods **(LO4)** • MindTap chapter 17 quiz - Time Series Analysis and Forecasting **(LO4)** MindTap chapter 18 quiz - Nonparametric Methods **(LO5)**
Week Eight: LO1,3,5	
Learning Activities and Materials	**Assessments**
Read: Modern Business Statistics • Chapter 20: Decision Analysis (20 pages) **(LO1) (LO3) (LO5)** Watch: • Decision Analysis 1: Maximax, Maximin, Minimax Regret (4:43mins) **(LO1) (LO3) (LO5)** • Decision Analysis 3: Decision Trees (3:05mins) **(LO1) (LO3) (LO5)**	Participate: • Discussion Forum: Complete the case problem, "Property Purchase Strategy" located at the end of chapter 20. Upload your report and discuss your findings and recommendations. Then study and comment on two of your classmates' post **(LO1) (LO3) (LO5)** Assignments: • MindTap chapter 20 assignment – Decision Analysis **(LO1) (LO3) (LO5)** • MindTap chapter 20 quiz - Decision Analysis **(LO1) (LO3) (LO5)** • MindTap Exam 2 over chapters 10 – 18, 20 **(LO1) (LO3) (LO4) (LO5) (LO6)**