



Elementary Statistical Methods (MATH 1342)

Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: TSI complete in mathematics.

Course Description

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology is recommended.

Required Textbook and Materials

1. *MyStatLab* access code package (standalone)
 - a. May be purchased online at www.mystatlab.com
 - b. May be purchased at a local bookstore:
Pearson ISBN number **9780134743295**
2. A basic six-function calculator (+, −, ÷, ×, √, %) with a ± key

Objectives

Course Objectives

Upon completion of this course, the student will be able to:

1. Explain the use of data collection and statistics as tools to reach reasonable conclusions.
2. Recognize, examine, and interpret the basic principles of describing and presenting data.
3. Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
4. Explain the role of probability in statistics.
5. Examine, analyze, and compare various sampling distributions for both discrete and continuous random variables.
6. Describe and compute confidence intervals.
7. Solve linear regression and correlation problems.
8. Perform hypothesis testing using statistical methods.

Core Objectives

1. **Critical Thinking Skills:** To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. **Communication Skills:** To include effective development, interpretation and expression of ideas through written, oral, and visual communication.
3. **Empirical and Quantitative Skills:** To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Course Outline

- A. Data Collection
 - 1. Introduction to the Practice of Statistics
 - 2. Observational Studies versus Designed Experiments
 - 3. Simple Random Sampling
 - 4. Other Effective Sampling Methods
 - 5. Bias in Sampling
 - 6. The Design of Experiments
- B. Organizing and Summarizing Data
 - 1. Organizing Qualitative Data
 - 2. Organizing Quantitative Data: The Popular Displays
 - 3. Additional Displays of Quantitative Data
 - 4. Graphical Misrepresentations of Data
- C. Numerically Summarizing Data
 - 1. Measures of Central Tendency
 - 2. Measures of Dispersion
 - 3. Measures of Position and Outliers
 - 4. The Five-Number Summary and Boxplots
- D. Describing the Relation Between Two Variables
 - 1. Scatter Diagrams and Correlation
 - 2. Least Squares Regression
- E. Probability
 - 1. Probability Rules
 - 2. Addition Rule and Complements
 - 3. Independence and the Multiplication Rule
- F. Discrete Probability Distributions
 - 1. Discrete Random Variables
 - 2. The Binomial Probability Distribution
- G. The Normal Probability Distribution
 - 1. Properties of the Normal Distribution
 - 2. Applications of the Normal Distribution
- H. Sampling Distributions
 - 1. Distribution of the Sample Mean
 - 2. Distribution of the Sample Proportion
- I. Estimating the Value of a Parameter
 - 1. Estimating a Population Proportion
 - 2. Estimating a Population Mean
 - 3. Estimating a Population Standard Deviation
- J. Hypothesis Tests Regarding a Parameter
 - 1. The Language of Hypothesis Testing
 - 2. Hypothesis Tests for a Population Proportion
 - 3. Hypothesis Tests for a Population Mean
 - 4. Hypothesis Tests for a Population Standard Deviation
- K. Inferences on Two Samples (*If time permits; coverage subject to teacher discretion*)
 - 1. Inference About Two Population Proportions
 - 2. Inference About Two Means: Dependent Samples
 - 3. Inference About Two Means: Independent Samples
 - 4. Inference About Two Population Standard Deviations

MATH 1342
Course Syllabus

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

Tests	60%
Comprehensive Final Exam	10%
Course Assignments	20%
Participation	10%

Course Requirements

1. Attendance is mandatory.
2. The student must purchase all of the required course materials.
3. The student will be expected to have access to the Internet and a computer.
4. Additional course requirements as defined by the individual course instructor.

Course Policies

1. Cheating of any kind will not be tolerated.
2. No food, drinks, or use of tobacco products in class.
3. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
4. The students are responsible for initiating and completing the drop process. Students who stop coming to class and fail to drop the course will earn an “F” in the course.
5. Additional class policies as defined by the individual course instructor.

Technical Requirements (for courses using Blackboard)

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at: https://help.blackboard.com/enus/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

Starfish

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

