Elementary Statistical Methods (Math 1342)
Spring 2025

INSTRUCTOR CONTACT INFORMATION

Instructor: Mark Jhun Vinluan

Email: mvinlua@bmtisd.com

Office Phone: 409-617-6600

Office Location: Beaumont Early College High School - Room 309

Office Hours: Monday to Friday, 7:15 AM - 2:45 PM

Afterclass Tutorials: Tuesday and Wednesday, from 3:00 PM to 4:00 PM

CREDIT: 3 units

MODE OF INSTRUCTION: Face-to-Face class

PREREQUISITE: A score of 350 or above on the TSI-Assessment placement test.

COURSE DESCRIPTION:

In the first part of the course, students will study the fundamental principles of collecting data. Emphasis will be placed on organizing raw data into meaningful structures, employing various tools and techniques for efficient data management. Students will also learn summarizing and describing data.

The second part of the course will focus on the crucial concepts of probability and probability distributions. Students will explore the underpinning principles of probability and learn to apply these principles to practical situations. Probability distributions, including discrete and continuous distributions, will be examined, providing students with the tools to analyze and understand the uncertainty in real-world datasets.

In the final part of the course, students will engage in the process of statistical inference, transitioning from analyzing samples to making informed conclusions about populations. Topics covered include hypothesis testing, confidence intervals, and regression analysis. Through hands-on exercises and real-world applications, participants will gain proficiency in drawing meaningful inferences, making data-driven decisions, and communicating results effectively.

COURSE OBJECTIVES:

Upon successful completion of this course, students will:

1. Understand and apply fundamental principles for collecting, organizing, summarizing, and analyzing both quantitative and qualitative data.
2. Explain and interpret the foundational concepts of probability theory and its applications in real-world contexts.
3. Analyze and apply discrete and continuous probability distributions to assess and manage uncertainty in data.
4. Perform and interpret various hypothesis tests, seamlessly transitioning from sample analysis to population-level conclusions.
5. Construct and evaluate confidence intervals to estimate population parameters with accuracy.
6. Apply regression analysis to explore relationships between variables and make data-driven predictions.
7. Develop and communicate valid conclusions and actionable insights based on statistical inferences and hypothesis testing findings.

Core-objectives

1. **Data Handling Proficiency:** Master the skills to collect, organize, summarize, and visualize both quantitative and qualitative data using appropriate tools and techniques.
2. **Quantitative and Qualitative Literacy:** Build literacy in interpreting diverse datasets, enabling students to identify patterns, trends, and key insights effectively.
3. **Probability Applications:** Apply probability concepts to analyze and solve practical problems, supporting evidence-based decision-making in uncertain situations.
4. **Statistical Inference Skills:** Perform hypothesis testing, construct confidence intervals, and analyze regression models to draw valid conclusions about populations from sample data.
5. **Critical Thinking and Evaluation:** Develop the ability to critically assess statistical results, identify limitations, and evaluate the reliability and implications of findings.
6. **Effective Communication:** Clearly articulate statistical findings, methodologies, and conclusions in both written and verbal forms, ensuring clarity and precision in communicating results to diverse audiences.

REQUIRED TEXTBOOK AND MATERIALS

1. MyStatLab Standalone Access Code
2. Calculator of your choice, but no phones as calculators.
3. Chromebook

ATTENDANCE POLICY

1. Regular attendance is expected for all scheduled class sessions, including lectures and discussions.
2. Students are expected to arrive on time for each class session.
3. Attendance will be recorded at the beginning of each class session.
4. *Excused absences* may be granted for documented medical reasons, family emergencies, or other extenuating circumstances. It is the responsibility of the student to communicate such circumstances to the instructor as soon as possible.
5. In the event of an anticipated absence, students are encouraged to communicate with the instructor in advance.
6. Students with *excused absences* may be eligible for make-up work, including missed assignments, quizzes, or exams. The nature of make-up work will be determined on a case-by-case basis in consultation with the instructor. The number of days absent plus one additional day will be given for a student to complete makeup work without penalty.
7. Excessive absences may negatively impact your grade and could result in withdrawal from the course.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

STUDENT CODE OF CONDUCT STATEMENT

It is your 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*. It may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

STARFISH

The institution employs an early alert system named Starfish. Periodically, you may be notified via email by Starfish concerning your academic standing, grades, and attendance. Faculty employ this tool to record attendance, raise flags or kudos, and facilitate appointments. Accessible through Blackboard or MyLIT, the Starfish link provides comprehensive academic alerts and guidance, aiding in your pursuit of academic success at LIT.

COURSE EXPECTATIONS

Instructor Expectations from Students

- Actively participate in class discussions and activities.
- Attend classes consistently and punctually.
- Submit assignments and activities on or before the specified deadlines.
- Uphold principles of academic honesty and integrity in all coursework.
- Communicate clearly and promptly with the instructor regarding any concerns or questions.
- Demonstrate respectful and professional behavior towards the instructor and peers.
- Follow course guidelines, syllabus instructions, and assessment criteria.

GRADING SYSTEM

Final grades will be calculated according to the following criteria:

- Tests and Final Exam 60%
- Core Assignment 20%
- Core Assessment 20%

GRADE SCALE

Numerical Grade	**Letter Grade**
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

GRADING AND REPORTING PROCEDURE

1. Teachers of record are required to post at least 1 grade in the Blackboard gradebook two days after the deadline submission.
2. Students may turn in late work for a maximum penalty of 10 percent of the total grade for each day late. Teachers can use their discretion to reduce this penalty for the benefit of students. All work assignments must accept late work assignments up to two days. After two days, it is up to the teacher's discretion to accept late work.

3. Students participating in UIL activities may exempt the No Pass, No Play rule in Advanced Placement courses identified in 33.081 of the TEXAS EDUCATION CODE. The district's exemption guidelines are as follows:
    a. The student's grade cannot be below 70 percent.
    b. The students must have no zeros recorded in the teacher's gradebook for the corresponding grading period.

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Catalog and Handbook at http://catalog.lit.edu/content.php?catoid=4&navoid=111#academic-dishonesty

DISABILITIES STATEMENT

LIT is dedicated to ensuring that all students have equal access to educational opportunities. If you require accommodations due to a documented disability, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. at the beginning of the semester. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

COURSE CALENDAR (Dates and assignments subject to change with or without notice.)

Week	Topic	Assignment due date
Jan 9 - 10	**Class Orientation** **Review Algebraic Concepts**	
Jan 13 - 17	**Chapter 1. Data Collection** 1.1. Introduction to the Practice Statistics 1.2. Observational Studies versus Designed Experiment	1.1 Jan 22 1.2 Jan 22
Jan 21 - Jan 24	1.3. Simple Random Sampling 1.4. Other Effective Sampling Method	1.3 Jan 24 1.4 Jan 28 **Test 1** - Jan 28
Jan 27 - 31	**Chapter 2. Organizing and Summarizing Data** 2.1. Organizing Qualitative Data 2.2. Organizing Quantitative Data: The Popular Survey	2.1 Jan 31 2.2 Feb 4 **Test 2** - Feb 4
Feb 3 - 7	**Chapter 3. Numerically Summarizing Data** 3.1. Measure of Central Tendency 3.2. Measure of Dispersion	3.1 Feb 7 3.2 Feb 11
Feb 10 - 13	3.3. Measure of Central Tendency and Dispersion from Grouped Data 3.4 Measure of Position and Outliers	3.3 Feb 13 3.4 Feb 20
Feb 19 -21	3.5 Five Number Summary and Box-Plot	Feb 25 **Test 3** - Feb 25
Feb 24 - 28	**Chapter 4. Describing the Relation Between Two Variables.** 4.1. Scatter Diagram and Correlation 4.2. Least Square Regression	4.1 Feb 28 4.2 Mar 4

Mar 3 - 6	4.4. Contingency Table and Association **Chapter 5. Probability** 5.1. Probability Rule	4.4 Mar 6 **Test 4** - Mar 6 5.1 Mar 18
Mar 17 - 21	5.2. The Addition and Complements 5.3. Independence and Multiplication Rule	5.2 Mar 21 5.3 Mar 25
Mar 24 - 28	5.4. Conditional Probability and the General Multiplication Rule 5.5. Counting Techniques	5.4 Mar 28 5.5 Apr 4 **Test 5** Apr 4
Mar 31 - Apr 4	**Chapter 6. Discrete Probability Distribution** 6.1. Discrete Random Variable	6.1 Apr 8
Apr 7 - 11	**Chapter 7. The Normal Distribution** 7.1. Properties of Normal Distribution 7.2. Application of Normal Distribution	7.1 Apr 11 7.2 Apr 15 **Test 6** - Apr 15
April 14 - 17	**Chapter 8. Sampling Distribution** 8.1. Distribution of Sample Mean 8.2. Distribution of Sample Proportion	8.1 Apr 17 8.2 Apr 23
Apr 22 - 25	**Chapter 9. Estimating Value of Parameter** 9.1. Estimating a Population Proportion 9.2. Estimating a Population Mean	9.1 Apr 25 9.2 Apr 29 **Test 7** - Apr 29
Apr 28 - May 2	**Chapter 10. Hypothesis Test Regarding a Parameter** 10.1. The Language of Hypothesis Testing 10.2. Hypothesis Test for a Population Proportion 10.3. Hypothesis Test for Population Mean	10.1 May 2 10.2 May 2 10.3 May 6 **Test 8** - May 6

May 5 - 9	**Chapter 11. Inference of Two Samples** 11.1. Inferences about Two Population Proportions 11.2. Inference about Two Means: Dependent Samples 11.3. Inference about Two Means: Independent Samples	11. 1 May 9 11.2 May 9 11.3 May 13 **Test 9** - May 13
	<u>Final Examination - Mon/Tue, May 12/13</u>	