

Elementary Statistical Methods (Math 1342)

INSTRUCTOR CONTACT INFORMATION

Instructor: Mark Jhun Vinluan

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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 principles for collecting, organizing, summarizing, and analyzing both quantitative and qualitative data;
2. explain fundamental concepts of probability theory;
3. understand and interpret the principles of probability in practical, real-world situations;
4. perform various hypothesis tests, transitioning seamlessly from samples to population analysis;
5. provide valid and robust conclusions based on hypothesis testing findings; and
6. apply critical thinking skills to evaluate and interpret the results of hypothesis tests.

Core-objectives

1. *Data Handling Proficiency:* Develop the ability to collect, organize, and analyze both quantitative and qualitative data effectively.
2. *Quantitative and Qualitative Literacy:* Enhance literacy in both quantitative and qualitative data, allowing for versatile data interpretation.
3. *Applied Probability Skills:* Apply probability concepts to practical situations, facilitating informed decision-making.
4. *Hypothesis Testing Competence:* Develop the skills to perform hypothesis tests and draw valid conclusions from sample to population analysis.
5. *Critical Evaluation Skills:* Cultivate the ability to critically evaluate statistical results and make informed decisions based on evidence.

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.
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:

- MidTerm and Final Exam 50%
- Chapter Test 30%
- Assignments 20%

GRADE SCALE

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

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 8 - 12	<p>Chapter 1. Data Collection</p> <p>1.1. Introduction to the Practice Statistics 1.2. Observational Studies versus Designed Experiment 1.3. Simple Random Sampling 1.4. Other Effective Sampling Method 1.5. Bias in Sampling (Online) 1.6. The Design Experiment (Online)</p> <p><u>Chapter 1 Test - Friday, Jan 12</u></p>	<p>Chapter 1.1 - 1.4 and Chapter 1 Test</p> <p>Monday, Jan 19</p>
Jan 15 - Jan 19	<p>Chapter 2. Organizing and Summarizing Data</p> <p>2.1. Organizing Qualitative Data 2.2. Organizing Quantitative Data: The Popular Survey</p> <p><u>Chapter Test - Friday, Jan 19</u></p>	<p>Chapter 2.1 - 2.2 and Chapter 2 Test</p> <p>Monday, Jan 22</p>
Jan 22 - Jan 26	<p>Chapter 3. Numerically Summarizing Data</p> <p>3.1. Measure of Central Tendency 3.2. Measure of Dispersion 3.3. Measure of Central Tendency and Dispersion from Grouped Data</p> <p><u>Chapter 3 Test - Friday, Jan 26</u></p>	<p>Chapter 3.1 - 3.3 and Chapter 3 Test</p> <p>Monday, Jan 29</p>
Jan 29 - Feb 2	<p>Chapter 4. Describing the Relation Between Two Variables.</p> <p>4.1. Scatter Diagram and Correlation 4.2. Least Square Regression 4.4. Contingency Table and Association</p> <p><u>Chapter 4 Test - Friday, Feb 2</u></p>	<p>Chapter 4.1, 4.2, 4.4 and Chapter 4 Test</p> <p>Monday, Feb 5</p>
Feb 5 - Feb 9	<p>Chapter 5. Probability</p> <p>5.1. Probability Rule 5.2. The Addition and Complements 5.3. Independence and Multiplication Rule</p>	<p>Chapter 5.1 - 5.3</p> <p>Monday, Feb 12</p>

Feb 12 - Feb 16	<p>5.4. Conditional Probability and the General Multiplication Rule 5.5. Counting Techniques 5.6. Putting Together: Which Methods Do I Use</p> <p><u>Chapter 5 Test - Friday, Feb 16</u></p>	<p>Chapter 5.4 - 5.7 Chapter 5 Test Wednesday, Feb 21</p>
Feb 19 - Feb 23	<p>Review for Midterm Exam</p> <p><u>Midterm Examination- Thu/Fri, Feb 22/23</u></p>	
Feb 26 - Mar 1	<p>Chapter 6. Discrete Probability Distribution</p> <p>6.1. Discrete Random Variable 6.2. The Binomial Probability Distribution</p>	<p>Chapter 6.1 - 6.2 Monday, Mar 4</p>
Mar 4 - Mar 8	<p>6.3. The Poisson Probability Distribution 6.4. The Hypergeometric Distribution</p> <p><u>Chapter 6 Test - Friday, Mar 8</u></p>	<p>Chapter 6.3 - 6.4 and Chapter 6 Test Monday, Mar 18</p>
Mar 18 - Mar 22	<p>Chapter 7. The Normal Distribution</p> <p>7.1. Properties of Normal Distribution 7.2. Application of Normal Distribution</p> <p><u>Chapter 7 Test - Friday, Mar 22</u></p>	<p>Chapter 7.1 - 7.2 and Chapter 7 Test Monday, Mar 25</p>
Mar 25 - Mar 29	<p>Chapter 8. Sampling Distribution</p> <p>8.1. Distribution of Sample Mean 8.2. Distribution of Sample Proportion</p> <p><u>Chapter 8 Test - Friday, Mar 29</u></p>	<p>Chapter 8.1 - 8.2 and Chapter 8 Test Monday 1, Apr 1</p>
Apr 1 - Apr 5	<p>Chapter 9. Estimating Value of Parameter</p> <p>9.1. Estimating a Population Proportion 9.2. Estimating a Population Mean 9.3. Estimating a Population Standard Deviation.</p> <p><u>Chapter 9 Test - Friday, Apr 5</u></p>	<p>Chapter 9.1 - 9.3 and Chapter 9 Test Monday, Apr 8</p>
Apr 8 - Apr 12	<p>Chapter 10. Hypothesis Test Regarding a Parameter</p>	<p>Chapter 10.1 - 10.4 and Chapter 10 Test</p>

	<p>10.1. The Language of Hypothesis Testing 10.2. Hypothesis Test for a Population Proportion 10.3. Hypothesis Test for Population Mean 10.4. Hypothesis Test for Population Standard Deviation</p> <p><u>Chapter 10 Test - Friday, Apr 12</u></p>	Monday, Apr 15
Apr 15 - Apr 19	<p>Chapter 11. Inference of Two Samples</p> <p>11.1. Inferences about Two Population Proportions 11.2. Inference about Two Means: Dependent Samples 11.3. Inference about Two Means: Independent Samples 11.4. Inference about Two Population Standard Deviations.</p> <p><u>Chapter 11 Test - Friday, Apr 19</u></p>	<p>Chapter 11.1 - 11.4 and Chapter 11 Test</p> <p>Monday, Apr 22</p>
Apr 22 - Apr 26	<p>Chapter 12. Inference on Categorical Data</p> <p>12.1. Goodness-of-fit Test 12.2. Test for Independence and the Homogeneity</p> <p><u>Chapter 12 Test - Friday, Apr 26</u></p>	<p>Chapter 12.1 - 12.2 and Chapter 12 Test</p> <p>Monday, Apr 29</p>
Apr 29 - May 3	<p>Chapter 13. Comparing Three or More Means</p> <p>13.1. Comparing Three or More Means 13.4. Two-Way Analysis of Variance</p> <p><u>Chapter 13 Test - Friday, May 3</u></p>	<p>Chapter 13.1 and 13.4 and Chapter 13 Test</p> <p>Monday, May 6</p>
May 6 - May 9	<u>Final Examination - Mon/Tue, May 6/7</u>	