Math 1342: Elementary Statistics
Fall 2017 Syllabus

Disclaimer

This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date course information, contact the instructor.

Instructor Information

Margaret Franklin
Llano High School
Phone: 325-248-2200
Email: mfranklin@llanoisd.org

Major Course Requirements

Tests

We will have at least three tests per nine weeks and a cumulative final examination. The exact dates and coverage of these tests will be specified in class. The final exam will be held as specified in the course schedule and it is cumulative.

Daily Work

Daily work will consist primarily of traditional homework problems completed either on paper or on a computer based system My Math Lab. The student will be required to purchase access to My Math Lab

Quizzes

Unannounced quizzes will be given weekly during the class period.

Student Learning Outcomes

1. Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in statistics including definitions of measures of central
tendency; standard deviation; standardized variable; regression line; coefficient of
determination; normally distributed variable; sampling distribution of the mean; sampling
distribution of the proportion; point estimate; confidence interval estimate; null hypothesis;
alternative hypothesis; critical value; and test statistic.

2. The students will describe the fundamental principles including the laws and theorems
arising from concepts covered in this course. Students will identify and apply the laws and
formulas that result directly from the definitions; for example, calculation of measures of
central tendency; standard deviations; coefficients of determination; critical values and test
statistics.

3. The students will apply course material along with procedures and techniques covered in
this course to solve problems. Students will use the facts, formulas, and techniques learned in
this course to find regression equations for data collected; use regression equations to make
predictions; calculate probabilities; find confidence intervals for means and proportions; and
perform a variety of hypothesis tests.

4. The students will develop specific skills, competencies and thought processes sufficient to
support further study or work in this field or related fields. Students will acquire a level of
proficiency in the fundamental concepts and applications necessary for further study in
academic areas requiring statistics as a prerequisite, or for work in occupational fields requiring
a background in statistics. These fields might include education, business, finance, marketing,
computer science, physical sciences, and nursing, as well as further study in other statistics
courses.

Course Content

include the particular sections listed are covered. (See textbook “Contents”)

1. The Nature of Statistics. Classifying statistical studies; sampling procedures.

2. Organizing Data. Grouping data; graphs and charts; distribution shapes; misleading graphs.

3. Descriptive Measures. Mean; median; mode; standard deviation; quartiles; percentiles;
deciles; boxplots.

4. Descriptive Methods in Regression and Correlation. Regression equation; coefficient of
determination; linear correlation.

5. Probability and Random Variables. Rules of probability; discrete random variables;
probability distributions.

6. The Normal Distribution. Areas under the standard normal curve; normally distributed
variables.
7. The Sampling Distribution of the Mean. Sampling error; mean and standard deviation of the sampling distribution of the mean.

8. Confidence Intervals for One Population Mean. Calculate confidence intervals for the mean; margin of error; sample size.

9. Hypothesis Tests for One Population Mean. Set up hypothesis tests; errors; perform hypothesis tests.

10. Inferences for Population Proportions. Calculating confidence intervals for one population proportion; performing hypothesis tests for one population proportion.


Core Curriculum Student Learning Objectives

- **Core Objective (Critical Thinking):** Develop and demonstrate a logical position (i.e. perspective, thesis, hypothesis) that acknowledges ambiguities or contradictions. (CT2)
  - **Course Student Learning Objective:** Students will calculate probabilities, find confidence intervals, and perform a variety of hypothesis tests.
  - **Assessment:** Assessment exam that demonstrates CT2.

- **Core Objective (Communication):** Develop, interpret, and express ideas through effective visual communication. (CS3)
  - **Course Student Learning Objective:** Students will create, interpret, and draw conclusions from histograms, box plots, and scatter plots.
  - **Assessment:** Assessment exam that demonstrates CS3.

- **Core Objective (Empirical and Qualitative Skills):** Manipulate and analyze numerical data and arrive at an informed conclusion. (EQS1)
  - **Course Student Learning Objective:** Students will use the facts, formulas, and techniques learned in this course to find regression equations; use regression equations to make predictions.
  - **Assessment:** Assessment exam that demonstrates EQS1.
**Weekly Course Topics**

*Week 1* Introduction, Statistics Basics, Sampling, Variables and Data  
*Week 2* Data, Qualitative Data, Quantitative Data, Distribution Shapes  
*Week 3* Measures of Center, Measures of Variation, Five-Number Summary  
*Week 4* Populations and Samples, Probability Basics, Events  
*Week 5* Rules of Probability, Discrete Random Variables  
*Week 6* Normal Distribution, Standard Normal Curve, Normally Distributed Variables  
*Week 7* Assessing Normality, Sampling Error, Distributions  
*Week 8* Sample Mean, Estimating a Population Mean  
*Week 9* Confidence Intervals, Margin of Error  
*Week 10* Confidence Intervals  
*Weeks 11 & 12* Hypothesis Tests  
*Week 14* Chi-Square, Chi-Square Goodness-of-Fit  
*Week 15* Linear Equations, The Regression Equation, Linear Correlation  
*Weeks 16 & 17* Review and Final Exam

**Honor Code**

Angelo State University expects its students to maintain complete honesty and integrity in their Academic pursuits. Students are responsible for understanding the Academic Honor Code, Which is available on the web at http://www.angelo.edu/forms/pdf/honorcode5.pdf.