Statistics
Spring 2012

Course no. 3321.010
Time TR 9:30
Location MCS 215
Instructor Trey Smith
Office MCS 220L
Office Hours MWF: 10:00-11:00, 1:00-2:00
TR: 11:00-12:00, 2:00-3:00
Others by Appointment
Phone (325) 942.2100 ext. 235
Email trey.smith@angelo.edu
Web http://www.angelo.edu/faculty/tsmith/
Fax (325) 942.2503

MyMathLab
This Course will require registration with MyMathlab. To do this, you will go to the following website:
http://pearsonmylabandmastering.com/?cc and click on “Register”. You will need the following information:
Course Name: Math 3321, Spring 2012
Course ID: smith64872

Formula Card
The formula card for this course can be downloaded here.

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.

Accommodation Statement
Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

Religious Holidays
A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. “Religious holy day” means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code 11.20. A student absent from classes for the observance of a religious holy day shall be allowed to complete work scheduled for that day within a reasonable amount of time as set out by the instructor.

Grading
Your grade will be determined using three tests and a cumulative final exam. The three tests will each be worth 1/3 of your grade. The final exam will be used to determine your final grade as follows: If you score a 90 or better on the final exam, you will receive 10 points on your final average (i.e. you will improve your grade by one letter grade). If you score a 50 or
worse on the final exam, you will lose 10 points on your final average (i.e., you will drop your grade by a letter grade).

**Homework**  Your homework will be used as bonus points for the three exams. No late homework will be accepted.

**Attendance**  Regular class attendance is expected. There will be no make-up for missed homework, so a missed day may result in a zero.

**Calculators**  Calculators will be allowed on designated exams.

**Course Outline**  The following is a tentative outline of the material to be covered. I reserve the right to change the material or sequence.

1. Statistics Basics
2. Data
3. Descriptive Measures
4. Descriptive Measures
5. Probability
6. Probability
7. Binomial Distributions
8. Introduction to the Normal Distribution
9. Review
10. **Test 1 (2.16)**
11. The Normal Distribution
12. Sampling Distribution of the Sample Mean
13. Introduction to Confidence Intervals (The 68.26-95.44-99.74 Rule)
14. Confidence Intervals (mean)
15. Confidence Interval (proportion)
16. Hypothesis Testing
17. Mean Hypothesis Tests
18. Mean Hypothesis Tests
19. Review
20. **Test 2 (3.29)**
21. Proportion Hypothesis Tests
22. Chi-Square
23. Chi-Square
24. One Way ANOVA
25. Regression
26. Regression
27. Review
28. **Test 3 (4.26)**
29. Review
30. Review
31. **Final Exam (5.10, 8:00-10:00)**
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. Additionally, the students will apply theorems such as the Central Limit Theorem.

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 fields requiring statistics as a prerequisite, or for work in occupational fields requiring a background in statistics. These fields might include medicine, education, social sciences, and psychology.

Course Content

**Textbook:** *Elementary Statistics, 8th Edition*, by Neil A. Weiss. The following chapters including 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.

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

12. **Chi-Square Procedures.** Chi-Square Goodness-of-Fit Test; Chi-Square Independence Test.

13. **Analysis of Variance.** The F-Distribution, One-Way ANOVA