**STAT 1052 Supplemental Introduction to Statistics**

**2 Semester Hours**

# Prerequisite:

# MATH 0213 or MATH 0115 or equivalent

## **Course Description:**

Remediation and support for students who are enrolled in STAT 1513 (Introduction to Statistics), but whose test scores and prior academic work do not indicate preparedness for college-level mathematics classes. Recommended for students who have not completed MATH 0213.

**Placement:**

Students who graduated high school with a cumulative GPA less than 3.0 and received an ACT score of 16-18 or CPT score of 65-74.

**Course Position in Curriculum:**

This course does not satisfy degree requirements at Cameron University for any degree program.

**Course Philosophy:**

This is a supplemental education course. The students that participate in this course are likely to be lacking the mathematical skills necessary for Introduction Statistics. Since this is the case, this course focuses on strengthening the necessary mathematical skills that are required to be successful in Introduction to Statistics. This can include reviewing material covered in Introduction to Statistics in more depth or introducing students to background topics that are necessary to understand the material in Introduction to Statistics.

**Information for CU Syllabus Template:**

## **Course Description**

Includes descriptive statistics (histograms, pie charts, pictograms, graphs, etc.); summary statistics (central tendency – mean, median, mode; variability – variance, standard deviation, range); basic probability concepts; statistical distributions; Binomial Distribution; Normal Distribution; distribution of the sample mean (proportion); confidence intervals; hypothesis testing (generally one population Normal & binomial, and difference in means or proportions situations).

## **Course and Program Learning Outcomes**

Student learning outcomes from the Oklahoma State Regents for Higher Education Course Equivalency Project:

* Identify statistical terminologies, such as types of data and research designs.
* Organize, display, and interpret data visually using tables, graphs, and frequency distributions.
* Calculate and interpret measures of central tendency and variability, such as mean, median, mode, variance, standard deviation, and quartiles.
* Apply elementary laws and principles to compute probabilities from sample spaces, including the rule of complements, the general addition rule, and the independent event multiplication rule.
* Apply the binomial and normal distributions to compute probabilities in appropriate situations.
* Construct and interpret appropriate confidence intervals to estimate one population mean and population proportion.
* Construct and interpret appropriate confidence intervals to estimate the difference between two population means and the difference between two population proportions.
* Conduct and interpret appropriate hypothesis tests for a population mean and a population proportion.
* Conduct and interpret appropriate hypothesis tests for the difference between two population means and the difference between two population proportions.

## **Course Objectives:**

Students who successfully complete STAT 1513 will be able to:

* Distinguish between discrete and continuous variables; determine the level of measurement of a variable; distinguish between observational studies and designed experiments; understand random sampling.
* Construct and interpret: frequency and relative frequency tables, bar graphs, histograms, and stem-and-leaf plots; and identify the general shape of distributions.
* Determine the mean, median, and mode of data; calculate range, variance, and standard deviation, and understand how they relate to dispersion; use the Empirical Rule and Chebyshev’s inequality to describe data; determine and interpret z-scores and percentiles; determine the five-number summary and construct a boxplot.
* Compute and interpret probabilities using the empirical and classical methods; use the general addition rule for disjoint and non-disjoint events; compute the probability of events using the complement rule; compute probabilities using the multiplication rule for independent events.
* Describe discrete probability distributions, specifically the binomial distribution, and compute probabilities for binomial random variables.
* Understand continuous probability distributions, including uniform and normal distributions, and use the standard normal probability table to compute probabilities for normally distributed random variables.
* Understand the Central Limit Theorem and describe the sampling distributions of the sample mean and sample proportion.
* Construct appropriate confidence intervals for a population proportion and a population mean and interpret the results.
* Conduct appropriate hypothesis tests for a population proportion and a population mean and interpret the results.
* Construct appropriate confidence intervals for the difference between two population proportions and two population means and interpret the results; Conduct appropriate hypothesis tests for the difference between two population proportions and two population means and interpret the results.

**Text:**

Fundamentals of Statistics, 5th Ed., Sullivan, Pearson, 2018.

1. MyStatLab with Textbook ISBN: 9780134763729
2. MyStatLab Standalone Access ISBN: 9780134743295

**Technology Usage:**

Use of a graphing calculator is at the discretion of the instructor. A basic statement on expected calculator use should be included on the syllabus. Calculators with built-in computer algebra systems (e.g., TI-89, TI-92/Voyage 200, TI-Nspire CAS, etc.) are not allowed in any mathematics course.

**Attendance Policy:**

* Attendance in this course is required, and it will be taken at the beginning of each class period.
* If a student misses thirty percent of class periods, an administrative withdrawal may be submitted.

**Administrative Withdrawal:**

If during the course of the semester, a student's class average falls below a passing grade due to inadequate attendance, the course instructor may recommend the assignment of an "AW" prior to the last date for an automatic withdrawal if this option is placed in the course syllabus, and attendance standards are clearly stated.  If a student has not attended class for a sufficient period such that thirty percent of the evaluative material for the course has been missed and the drop/add period has expired, then the faculty member may recommend Administrative Withdrawal to the Vice President for Academic Affairs through the department chair and dean.  The faculty member must clearly indicate the date of last attendance on the request. Before such action is taken, the student will be notified through the university’s Early Alert System of the status of his or her grade.  Any student appeal must occur at that time. The student will be given a reasonable time to respond, after which time the recommendation for administrative withdrawal will be sent to the Provost, or designee, for approval. Students enrolled in Supplemental Introduction to Statistics (STAT 1052) may be withdrawn from Introduction to Statistics (STAT 1513 if withdrawn from (STAT 1052).

**Evaluation/Grading**

Grades will be based on the weighted average of homework, quizzes, tests, and attendance.

**Weighted Average Equivalent Grade**

**70% -100% S**

**69% or below U**

**\*STAT 1052 Recommended Supplemental Topics:**

**(Based on Recommended Schedule for STAT 1513)**

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|  | **STAT 1513 Content** | **Supplemental Topic** |
| **Week 1** | Syllabus, 1.1-1.3 | * Definitions * Order of Operations * Scientific Notation |
| **Week 2** | 2.1-2.3 | * Percents and Decimals * Relative Freq. * Reading Graphs |
| **Week 3** | 3.1-3.3 | * Linear Eq. * Definitions * Summation Notation * Examples of Mean, Median, and Mode |
| **Week 4** | 3.3-3.5 | * Empirical Rule * Chebyshev’s Rule * Reduced Fractions |
| **Week 5** | Catch-up/Review for Test #1, Test #1 | * Review for Test |
| **Week 6** | 5.1-5.3 | * Fractions * Union and Intersection |
| **Week 7** | 6.1 | * Exponents * Binomial Tables |
| **Week 8** | 6.2, 7.1 | * Binomial Tables * Normal Distribution |
| **Week 9** | 7.2 | * Example of Normal Distributions |
| **Week 10** | Catch-up/Review for Test #2, Test #2 | * Review for Test |
| **Week 11** | 9.1 -9.2 | * t-values * Sample Sizes |
| **Week 12** | 10.1-10.2 | * Example of Hypothesis Testing for Proportions and Means. |
| **Week 13** | 11.1-11.2 | * Examples of Two-Sample Hypothesis Testing. |
| **Week 14** | Catch-up/Review for Test#3, Test #3 | * Review for Test |
| **Week 15** | Begin review for final | * Review for final |
| **Week 16** | Final |  |