South Plains College – Mathematics Department
**Statistical Methods (Dual Credit) – MATH 1342.011**
Course Syllabus – Spring Semester 2019

**Instructor**: Tom Johnson
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**Office Hours:** MTWR 8:00 – 8:30 AM
MTWR 10:30 – 11:00 PM
F 8:00 AM – Noon
(Please make an appointment if another time is needed.)

**Course Description**: MATH 1342 Statistical Methods **(3:3:0)** Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Semester Hours: 3 Lecture Hours: 3 Lab Hours: 0
Pre-requisite: MATH 0320 or two units of high school algebra.
*Note: This course satisfies a **020 Mathematics** Core Curriculum requirement.*

**Textbook:** Online version to be purchased and accessed through Pearson Education;
Triola, M. F. (2018). Elementary Statistics Using EXCEL. 6th Ed. Boston: Pearson. ISBN 9780134506623

**Attendance:** Attendance and effort are the most important activities for success in this course. Class attendance may be taken at any time during the class period, so please do not be late or leave early. You may be dropped from this course with a grade of X or F if you are absent four (4) consecutive classes or if you exceed six (6) absences throughout the semester. Special circumstances will be considered.

**Course Objectives:** Successful completion of this course should reflect mastery of the following objectives:

1. Descriptive Statistics
2. Regression Analysis
3. Probability & Discrete Random Variables
4. Normal Distributions
5. Statistical Estimations
6. Hypothesis Testing
7. Technology

**Student Learning Outcomes/Competencies:** Upon completion of this course and receiving a passing grade, the student will be able to:

I. Descriptive Statistics (DS)
- a. Types of data and design of experiments
- b. Data presentation (graphs/charts)
- c. Measures of central tendency
- d. Measures of variation
- e. Exploratory data analysis

II. Regression Analysis (RA)
- a. Scatterplots and correlation
- b. Regression and applications of regression
- c. Regression diagnostics

III. Probability & Discrete Random Variables (PDRV)
- a. Probability concepts
- b. Addition and complement rules
- c. Multiplication and conditional rules
- d. Binomial rules
- e. Discrete probability distributions

IV. Normal Distribution (ND)
- a. Standard normal distribution
- b. Probability calculations using the normal distribution
- c. Sampling distributions and estimators
- d. The Central Limit Theorem

V. Statistical Estimation (SE)
- a. Point estimates and confidence intervals for proportions
- b. Point estimates and confidence intervals for means
- c. Finding the necessary sample size under given conditions

VI. Hypothesis Testing (HT)
- a. One sample mean test (z-test and t-test)
- b. Proportion test (one sample)
- c. Two-mean test for independent samples
- d. Analysis of Variance (ANOVA)

VII. Technology (Tech)
- a. Calculator applications (TI83+ / TI84+)
- b. Computer applications (Excel® spreadsheets)

**Core Objectives:**

*Communication Skills:* Effective development, interpretation, and expression of ideas through written, oral, and visual communication.

*Critical Thinking:* Creative thinking, innovation, inquiry, analysis, evaluation, and synthesis of information.

*Empirical and Quantitative Competency Skills:* The manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

**Assignments & Grading:** Homework assignments will be made at each class meeting. Keep all class materials (notes, handouts, homework, and exams) organized in a notebook (3-ring binder). These materials are subject to be turned in for grading at any time. Please make certain all materials accompany you to each class meeting. Late assignments will be accepted with a 10% penalty. Daily work (homework, notebook) will count for 60%, unit exams count for 30%, and the FINAL EXAM will count for 10% of the final grade. Expect four to five unit exams throughout the course and a cumulative final exam at the end of the course. Your final average in the course will determine the letter grade posted on your transcript. This grade is determined by the following scale:

A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (0-59%).

**Supplies:** You will need a TI 83+ or TI 84+ graphing calculator*, graph paper, and a 3-ring binder.

**Calculators on cell phones, TI-89, TI-92, or TI-Inspire calculators, or any other electronic devices will NOT be allowed during testing without permission from the instructor.*

**Supplementary Course Information:** Blackboard is the online course management system that will be utilized for this course. This course syllabus, as well as any class handouts can be accessed through Blackboard. Login at http://spc.blackboard.com. The user name and password should be the same as the MySPC and SPC email.

User name: first initial, last name, and last 4 digits of the Student ID

Password: Original CampusConnect Pin No. (found on SPC acceptance letter)

**Student Conduct:** The Student "Code of Conduct" will be followed in this course. You are expected to be respectful to others in the classroom. Please SILENCE phones before entering class and assist in maintaining a classroom environment conducive to learning. Any student disrupting the learning environment will be asked to leave and may be dropped from the course.

**Disability:** Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request ADA Sec. 504 accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability. For more information, call or visit the Disability Services Office in the Student Health & Wellness Office, 806-716-2577.

**Equal Opportunity:** South Plains College strives to accommodate the individual needs of all students in order to enhance their opportunities for success in the context of a comprehensive community college setting. It is the policy of South Plains College to offer all educational and employment opportunities without regard to race, color, national origin, religion, gender, disability or age.

**Diversity**: In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

**Campus Concealed Carry - Texas Senate Bill - 11** (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the SPC policy at: (http://www.southplainscollege.edu/human_resources/policy_procedure/hhc.php).

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

MATH 1342 Assignments and Tests Schedule – Spring 2019 – Mr. Johnson

| Week # | | M, W, R | Chapter.Section | Lesson / Tentative Assignment |
|---|---|---|---|---|
| Week 1 | M | 1/14 - 1/18 | 1.1 | DS – Statistical & Critical Thinking |
| | W | | 1.2 | DS – Types of data |
| Week 2 | W | 1/21 - 1/25 | 1.3 | DS – Collecting data samples |
| | R | | 1.4 | Tech – Intro to Excel® / TI84+ |
| Week 3 | M | 1/28 - 2-1 | 2.1 | RA – Frequency distribution |
| | W | | 2.2 | RA - Histograms |
| | R | | 2.3 | RA – Graphs that enlighten vs. deceives |
| Week 4 | M | 2-4 - 2/8 | 2.4 | RA – Scatterplots, correlation, and regression |
| | W | | | Rvw |
| | R | | | Test #1 |
| Week 5 | M | 2/11 - 2/15 | 3.1 | DS – Measures of central tendency |
| | W | | 3.2 | DS – Measures of variation |
| | R | | 4.1 | PDRV – Basic concepts of Probability |
| Week 6 | W | 2/18 - 2/22 | 4.2 | PDRV – Addition and Multiplication rules |
| | R | | 4.3 | PDRV – Complements, conditional Probability |
| Week 7 | M | 2/25 - 3/1 | 4.4 | PDRV – Counting |
| | W | | 5.1 | PDRV – Probability Distributions |
| | R | | 5.2 | PDRV – Binomial Probability Distributions |
| Week 8 | M | 3/4 - 3/8 | 5.3 | PDRV – Poisson Probability Distributions |
| | W | | | Rvw |
| | R | | | Test #2 |
| SP BRK | ☺ | 3/11 - 3/15 | | SPRING BREAK |
| Week 9 | M | 3/18 - 3/22 | 6.1, 6.2 | ND – Standard Normal distr. & Applications |
| | W | | 6.3 | ND – Sampling distr. & estimators |
| | R | | 6.4 | ND – Central Limit Theorem |
| Week 10 | M | 3/25 - 3/29 | 6.5, 6.6 | ND – Assessing normality & Approx. to Binomial |
| | W | | 7.1 | SE – Estimating a population proportion |
| | R | | 7.2 | SE – Estimating a population mean |
| Week 11 | M | 4/1 - 4/5 | 7.3 | SE – Estimating a pop. standard dev. of variance |
| | W | | | Rvw |
| | R | | | Test #3 |
| Week 12 | M | 4/8 - 4/12 | 8.1 | HT – Basics of hypothesis testing |
| | W | | 8.2 | HT – testing a claim about a population |
| | R | | 8.3 | HT – Testing a claim about a mean |
| Week 13 | M | 4/15 - 4/19 | 8.4, Rvw | HT – Testing a claim about a SD or Varience |
| | W | | | Test #4 |
| Week 14 | W | 4/22 - 4/26 | 9.2 | Tech – Two means: independent samples |
| | R | | 10.1 | Tech – Correlation |
| Week 15 | M | 4/29 - 5/3 | 10.2 | Tech – Regression |
| | W | | 12.1 | Tech – One-way ANOVA |
| | R | | | REVIEW (Cumulative) |
| Week 16 | tbd | 5/6 - 5/9 | | Final Exam – To Be Determined |