SOUTH PLAINS COLLEGE

Course Syllabus – Statistical Methods

MATH 1342.202 – Spring 2018

Department: Mathematics and Engineering

Instructor: Denise Johansen

Discipline: Mathematics

Office: RC 223D; (806)716-4632

Course Number: Math 1342

Cell/Text: (513)227-0095

Course Title: Statistical Methods

Email: djohansen@southplainscollege.edu

Credit: 3 **Lecture:** 3 **Lab:** 0

Time/Place: TR 11am-12:15pm/RC232

Office Hours: MTWR 8-8:30am and 10:30am-11am, TR 2:30pm-4pm, F 9am-12pm, or by appointment

This course satisfies a core curriculum requirement: Yes – mathematics

Prerequisites: 2 years of high school algebra or Math 0320, TSI compliance

Available Formats: conventional/internet

Campuses: Levelland Campus, Reese Campus, Plainview

Textbook (Required): Elementary Statistics: A Brief Version 7/e, by Allan G. Bluman. McGraw-Hill. ISBN-13: 978-0-07-772058-2.

Supplies (Required): Scientific calculator; TI-83/84 Calculator highly recommended.

Course Description: This course is a study of the methods of analyzing data, statistical concepts and models, estimation, tests of significance, introduction to analysis of variance, linear regression, and correlation.

Course Purpose/Rationale/Goal: To provide a transferable course in the elements of statistical methods.

Math 1342.202 – Statistical Methods

Course Requirements: To maximize the potential to complete this course, a student should attend all class and laboratory meetings, take notes and participate in class, complete all homework assignments and examinations including final examinations.

Course Evaluation:

- There will be in-class assignments collected daily. By their very nature, in-class assignments can NOT be made up. The in-class average is worth 10% of your grade, and the lowest 3 in-class grades will be dropped.
- Homework assignments will be due weekly, at the beginning of class on Tuesdays. Late homework will NOT be accepted! The homework average is worth 10% of your grade, and the lowest 2 homework grades will be dropped.
- There will be 3 in-class exams. These will each be worth 20% of your grade. If an exam is missed for a legitimate reason, a makeup exam may be given. It is your responsibility to contact me to schedule a makeup exam.
- There will be 1 in-class cumulative final exam on **Tuesday, May 8th from 10:15am-12:15pm**, worth 20% of your grade.

Letter Grades:

90%	- 100%	A
80%	- 89%	B
70%	- 79%	C
60%	- 69%	D
59% & below		F

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

1. represent raw data using frequency distributions
2. represent raw data using polygons, ogives, histograms, and pie charts
3. calculate measures of central tendency, variation, and position for both grouped and ungrouped data and interpret in writing the significance and meaning of the calculations
4. calculate coefficients of variation and skewness and interpret in writing the significance of the calculations
5. calculate classical and empirical probabilities
6. apply binomial, Poisson, and normal distribution properties to calculate probabilities and interpret in writing the significance of the calculations
7. calculate mean, variance, and standard deviations of probability distributions and interpret in writing the significance of test results
8. evaluate a hypothesis testing situation to determine the appropriate test to be used
9. use parametric and non-parametric tests for hypothesis testing and interpret in writing the significance of test results
10. calculate simple and multiple linear regression equations and use equations to make predictions
11. calculate coefficients of correlation, determination, and non-determination and interpret in writing the significance of the calculations

12. use a computer statistics program and/or a statistical calculator to help with computations

Core Objectives:

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

- Develop, interpret, and express ideas through written communication
- Develop, interpret, and express ideas through oral communication
- Develop, interpret, and express ideas through visual communication

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

- Generate and communicate ideas by combining, changing, and reapplying existing information
- Gather and assess information relevant to a question
- Analyze, evaluate, and synthesize information

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

- Manipulate and analyze numerical data and arrive at an informed conclusion
- Manipulate and analyze observable facts and arrive at an informed conclusion

Attendance Policy: Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive as defined in the course syllabus. **[*Absences for this course are considered excessive if you have 4 in a row or a total of 8. If you reach 4 consecutive absences or a total of 8 absences, you will be administratively withdrawn from the class with a grade of 'X' or 'F'.*]**

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a class after official enrollment, absences will be attributed to the student from the first class meeting.

Students who enroll in a course but have "Never Attended" by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records.

A student who does not meet the attendance requirements of a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor. Instructors are responsible for clearly stating their administrative drop policy in the course syllabus, and it is the student's responsibility to be aware of that policy.

It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

Last day to drop is Thursday, April 26th.

SPC School Holidays:

Monday, 1/15, Martin Luther King Holiday
Monday-Friday, 3/12-3/16, Spring Break
Monday, 4/2, Easter Holiday

Academic Integrity: It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension.

Cheating: Dishonesty of any kind on examinations or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination, obtaining information during an examination from the textbook or from the examination paper of another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in an office are examples of cheating. Complete honesty is required of the student in the presentation of any and all phases of course work. This applies to quizzes of whatever length, as well as to final examinations, to daily reports and to term papers.

Dress Code: Reasonable standards of decency apply to the college community. The student should dress in a manner which does not distract from the academic atmosphere. Revealing attire or clothing carrying obscene or offensive slogans is not permitted. In all academic buildings, classrooms, offices, the Student Center, and dining facilities, students are required to wear shirts and shoes.

Language: Please be respectful of others and use language that is appropriate to the workplace.

Cellphones: To limit disruptions to the class and distractions to yourself, please put your cellphone on silent mode or airplane mode. If you feel a call is an emergency that you must answer, please take the phone out in the hall before answering to minimize the disruption to the class. If you feel you must leave class, please do so as quietly as possible.

Campus Carry: South Plains College permits the lawful carry of concealed handguns in accordance with Texas state law, and Texas Senate Bill 11. Individuals possessing a valid License to Carry permit, or the formerly issued Concealed Handgun License, may carry a concealed handgun at all campus locations except for the following:

- Natatorium

For a complete list of campus carry exclusions zones by event, please visit http://www.southplainscollege.edu/campuscarry.php

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.

Disability Statement: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Special 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 to the Special Services Coordinator. For more information, call or visit the Special Services Office in the Student Services Building, 716-2529 or 716-2530.

COURSE OUTLINE / CALENDAR*

Problems are assigned for each section of the textbook that we cover and turned in weekly on Tuesdays. To master the material and prepare for the exams, you **MUST** work extra problems!

* Assignments and deadlines are subject to change at instructor's discretion, and all changes will be announced in class and posted on Blackboard.

Date	Content	Assignments
Week 1 1/16 1/18	**Syllabus & The Nature of Probability and Statistics** • Syllabus Overview • 1.1 – Descriptive and Inferential Statistics • 1.2 – Variables and Types of Data • 1.3 – Data Collection and Sampling Techniques • 1.4 – Experimental Design	Read Sections 1.1-1.4 Hwk 1.1 (4, 8, 12, 16) Hwk 1.2 (6, 8, 12, 14, 20-28 evens) Hwk 1.3 (6, 10-14 all) Hwk 1.4 (16-26 evens, 38, 40) **Due 1/23**
Week 2 1/23 1/25	**Frequency Distributions and Graphs** • 2.1 – Data Classification • 2.2 – Histograms, Frequency Polygons, and Ogives • 2.3 – Other Types of Graphs • 2.4 – Paired Data and Scatter Plots	Read Sections 2.1-2.4 Hwk **Due 1/30**

Week 3 1/30 2/1	**Data Description (Part 1)** • 3.1 – Measures of Central Tendency • 3.2 – Measures of Variation	Read Sections 3.1-3.2 Hwk **Due 2/6**
Week 4 2/6 2/8	**Data Description (Part 2) & Review for Exam I** • 3.3 – Measures of Position • 3.4 – Exploratory Data Analysis • Review for Exam I	Read Sections 3.3-3.4 Hwk **Due 2/13**
Week 5 2/13 2/15	**Exam I & Probability and Counting Rules (Part 1)** • **Exam I (Chapters 1-3)** • 4.1 – Sample Spaces and Probability • 4.2 – The Addition Rules for Probability	Read Sections 4.1-4.2 Hwk **Due 2/20**
Week 6 2/20 2/22	**Probability and Counting Rules (Part 2) & Discrete Probability Distributions (Part 1)** • 4.3 – The Multiplication Rules and Conditional Probability • 5.1 – Probability Distributions • 5.2 – Mean, Variance, Standard Deviation, and Expectation	Read Sections 4.3, 5.1-5.2 Hwk **Due 2/27**
Week 7 2/27 3/1	**Discrete Probability Distributions (Part 2) & The Normal Distribution (Part 1)** • 5.3 – The Binomial Distribution • 6.1 – Normal Distributions • 6.2 – Applications of the Normal Distribution	Read Sections 5.3, 6.1-6.2 Hwk **Due 3/6**
Week 8 3/6 3/8	**Exam II** • Review for Exam II • **Exam II** (Chapters 4-6)	N/A
3/12-16	**Spring Break – No Classes!**	
Week 9 3/20 3/22	**The Normal Distribution (Part 2) & Confidence Intervals and Sample Size (Part 1)** • 6.3 – The Central Limit Theorem • 7.1 – Confidence Intervals for the Mean When σ is Known • 7.2 – Confidence Intervals for the Mean When σ is Unknown	Read Sections 6.3, 7.1-7.2 Hwk **Due 3/27**

Week 10 3/27 3/29	**Confidence Intervals and Sample Size (Part 2) & Hypothesis Testing (Part 1)** • 7.3 – Confidence Intervals and Sample Size for Proportions • 8.1 – Steps in Hypothesis Testing – Traditional Method • 8.2 – z Test for a Mean • 8.3 – t Test for a Mean	Read Sections 7.3, 8.1-8.2 Hwk **Due 4/3**
Week 11 4/3 4/5	**Hypothesis Testing (Part 2) & Testing the Difference Between Two Means and Two Proportions (Part 1)** • 8.4 – z Test for a Proportion • 9.1 – Testing the Difference Between Two Means: Using the z Test • 9.2 – Testing the Difference Between Two Means of Independent Samples: Using the t Test	Read Sections 8.4, 9.1-9.2 Hwk **Due 4/10**
Week 12 4/10 4/12	**Hypothesis Testing with Two Samples (Part 1)** • 9.3 – Testing the Difference Between Means (Dependent Samples) • 9.4 – Testing the Difference Between Proportions • Review for Exam III	Read Sections 9.3-9.4 Hwk **Due 4/17**
Week 13 4/17 4/19	**Exam III & Correlation and Regression (Part 1)** • **Exam III** (Chapters 7-8) • 10.1 – Correlation	Read Section 10.1 Hwk **Due 4/24**
Week 14 4/24 4/26	**Correlation and Regression (Part 2)** • 10.2 – Linear Regression • 10.3 – Coefficient of Determination and Standard Error of the Estimate	Read Sections 10.2-10.3 Hwk **Due 5/1**
Week 15 5/1 5/3	**Analysis of Variance & Review for Final Exam** • 11.3 – Analysis of Variance • Review for Final Exam	Read Section 11.3 Hwk **Due 5/8**
Week 16 5/8	**Final Exam** • **Final Exam, 10:15am-12:15pm**	

* Assignments and deadlines are subject to change at instructor's discretion, and all changes will be announced in class and posted on Blackboard.