GENERAL COURSE SYLLABUS

Department: Mathematics and Engineering

Discipline: Mathematics

Course Number: Math 2342

Course Title: Statistics for Engineers and Scientists

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

Prerequisites: Calculus III (Math2315)

Available Formats: Conventional

Campus: Reese Campus

Textbook: Probability and Statistics for Engineers and Scientists (4th ed.), by Anthony Hayter

Supplies: Graphing Calculator

Course Description: This course covers descriptive statistics, probability, random variables and distributions, mean, variance, parameter estimation, hypothesis testing, regression, analysis of variance. **This is a calculus-based statistics course. Although this course will focus on applications, some theory will be taught. Excel will also be utilized throughout the semester on a limited basis.**

Course Purpose/Rational/Goal: To provide a transferable course in the elements of mathematical statistics for engineers and scientists.

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, 716-2577

Course Requirements: To maximize the potential to complete the course, a student should attend all class meetings, take notes, participate in class, complete all homework assignments, and demonstrate mastery (at least 70%) on all exams including the final examination.

Course Evaluation: Please see the instructor's course information sheet for specific items used in evaluating student performance.

Attendance: Required, if you want to pass the class. Excessive absences (based on instructor) may result in an administrative withdrawal.

Computers: Some of the exercises will require the use of a computer. Students will be encouraged to use EXCEL, although other statistical software packages may be acceptable based on instructor consent.

Student Learning Outcomes/Competencies:

I. Probability Theory

A. Introduction to Probability and Events
B. Combination of Events and Conditional Probability
C. Probability of Event Intersections/Posterior Probabilities

II. Descriptive Statistics

A. Experimentation and Data Presentation
B. Sample Statistics Including Measures of Center, Position, and Variance

III. Random Variables

A. Discrete Random Variables
B. Continuous Random Variables
C. Expectation and Variance of Continuous Random Variables
D. Jointly Distributed Random Variables
E. Combinations and Functions of Random Variables

IV. Discrete Probability Distributions

A. Binomial Distribution
B. Geometric, Negative Binomial, and Hypergeometric Distributions
C. Poisson and Multinomial Distributions

V. Continuous Probability Distributions

A. Uniform and Exponential Distributions
B. Gamma, Weibull, and Beta Distributions

VI. Normal Distribution

A. Probability Calculations Using the Normal Distribution
B. Linear Combinations of Normal Random Variables
C. Approximating Distributions with Normal Distribution

VII. Statistical Estimation, Sampling Distributions, and Confidence Intervals

A. Point Estimates and Properties of Point Estimates
B. Confidence Intervals for Means and Proportions

VIII. Hypothesis Testing

A. One-mean test
B. Two-mean test for dependent and independent samples
C. Proportion test
D. Analysis of Variance

IX. Linear Correlation and Regression

A. Correlation Analysis
B. Linear Regression Analysis
C. Regression Diagnostics

MATH 2342—MATHEMATICAL STATISTICS FOR ENGINEERS/SCIENTISTS

INSTRUCTOR: Alan Worley
Math & Engineering 120
Phone #: 716-2645
E-mail: aworley@southplainscollege.edu

OFFICE HOURS: Monday/Wednesday: 9:45-11:00am, 1:30-2:30pm
Tuesday/Thursday: 9:45-11:00am
Fridays: 9:00am-Noon
OR BY APPOINTMENT

TEXTS AND MATERIALS:

Probability and Statistics for Engineers and Scientists (4th ed.), by Anthony Hayter
Graphing Scientific calculator

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ATTENDANCE: Required, if you want to pass the class.

GRADING: There will be three examinations and one comprehensive final. Homework/in-class assignments will probably be assigned each class lecture. Homework and in-class assignments all fall under an assignment grade. Late homework will be accepted, but you can only receive a maximum of 50% for any late work. Homework that is turned in by other classmates will result in a 0. Make-up exams will be given only for special reasons, and arrangements must be made with the instructor prior to the scheduled exam. In addition, make-up exams are significantly harder than the original exams.

A: 90-100	3 one-hour exams:	20% each
B: 80-89	Final exam:	25%
C: 70-79	Assignments:	15%
D: 60-69		
F: 0-59		

TUTORS: Forget about it. Help each other, and use me as a resource. My first job is to convey the material. My second job (and probably most important) is to help you understand the material. So, please see me during my office hours, email me, call me, or see me after class for any assistance whatsoever.