STAT 3410: Probability and Statistics

2023 Summer Session	
Total Class Sessions: 25 **Class Sessions Per Week: 5** **Total Weeks: 5** **Class Session Length (Minutes): 145** **Credit Hours: 4**	**Instructor: Staff** **Classroom: TBA** **Office Hours: TBA** **Language: English**

Course Description:

Probability and statistics useful for science and engineering applications are developed in this course. The topics include descriptive statistics, probability distributions, statistical inference, estimation, test of hypothesis, experimental design, linear regression, correlation, and analysis of variance.

Course Materials:

Probability and Statistics for Engineering and the Sciences, Jay L. Devore, 9th edition

Course Format and Requirements:

The primary format of this course is lecture, problem solving and discussion. Familiarizing with the course material before class, you will gain a better understanding the information presented during lecture. Each student will be responsible for learning as much as possible. Students are strongly encouraged to ask questions on things you did not understand.

Attendance:

Attendance will not be taken but all quizzes will be the taken at the beginning in class. Arriving late may cause you to miss a quiz, impacting your performance assessment. There is no made-up quiz.

Course Assignments:

Homework: You must submit a hardcopy of your completed homework at the end of class on the date due; late homework will NOT be accepted. Working with fellow students on this homework is fine but plagiarizing is not allowable.
Quizzes: There will be 5 quizzes administered through the whole semester. Quizzes will always be completed in the first ten minutes of class. The quiz problems will be similar to homework problems and in-class examples. There will be no make-up quizzes.
Exams:

Midterm Exams
There will be two midterm exams in this course. The midterm exams will be based on concepts covered in class. They will be in-class, close-book and non-cumulative.
Final Exam
The final will be cumulative and close-book. Note that the final will not be taken during the normal class times. Exact time and location for final will be announced later.

Course Assessment:

Homework Assignments	10%
Quizzes (5)	15%
Midterm Exams 1	20%
Midterm Exams 2	20%
Final Exam	35%
Total	**100%**

Grading Scale (percentage):

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
98-100	**93-97**	**90-92**	**88-89**	**83-87**	**80-82**	**78-79**	**73-77**	**70-72**	**68-69**	**63-67**	**60-62**	**<60**

Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another, but all other work should be completed independently.
Students are expected to adhere to the standards of academic honesty and integrity that are described in the Chengdu University of Technology's *Academic Conduct Code.* Any work suspected of violating the standards of the *Academic Conduct Code* will be reported to the Dean's Office. Penalties for violating the *Academic Conduct Code* may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the *Academic Conduct Code*.

Special Needs or Assistance:

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.

Tentative Course Schedule:

Chapter 1 Overview and Descriptive Statistics

Class 1	1.1 Populations, Samples and Processes 1.2 Pictorial and Tabular Methods	Homework Assignments
Class 2	1.3 Measures of Location 1.4 Measures of Variability	Homework Assignments
Chapter 2 Probability		
Class 3	2.1 Sample Spaces and Events 2.2 Properties of Probability 2.3 Counting Rules and Techniques	Homework Assignments
Class 4	2.4 Conditional Probability 2.5 Independent	Homework Assignments
Chapter 3 Discrete Random Variables and Probability Distributions		
Class 5	3.1 Random Variables 3.2 Discrete Distributions 3.3 Expected Values	Quiz 1 Homework Assignments
Class 6	3.4 The Binomial Probability Distribution 3.5 Hypergeometric Distributions 3.6 Poisson Distributions	Homework Assignments
Class 7	4.1 Probability Density Functions 4.2 CDFs and Expected Values	Quiz 2 Homework Assignments
Class 8	4.3 Normal Distribution 4.4 Exponential & Gamma Distributions 4.6 Probability Plots	Homework Assignments
Class 9	**Midterm 1**	
Chapter 5 Joint Probability Distributions and Random Samples		
Class 10	5.1 Jointly Distributed Variables 5.2 Covariance and Correlation 5.3 Statistics and Their Distributions	Homework Assignments
Class 11	5.4 Distribution of the Sample Mean 5.5 Linear Combinations	Homework Assignments
Chapter 6 Point Estimation		
Class 12	6.1 Concepts of Point Estimation	Quiz 3
Chapter 7 Statistical Intervals Based on a Single Sample		
Class 13	7.1 Basic Properties of Confidence Intervals 7.2 Large-Sample Confidence Intervals for a Population Mean and Proportion	Homework Assignments
Class 14	7.3 Small Sample Intervals for the Mean of a Normal Population 7.4 Confidence Intervals for the Variance of a	Homework Assignments

	Normal Population	
Chapter 8 Tests of Hypotheses Based on a Single Sample		
Class 15	8.1 Hypotheses and Test Procedures 8.2 z Tests for Hypotheses about a Population Mean	Quiz 4 Homework Assignments
Class 16	8.3 The One-Sample t Test 8.4 Tests Concerning a Population Proportion	Homework Assignments
Class 17	**Midterm 2**	
Chapter 9 Inferences Based on Two Samples		
Class 18	9.1 z Tests and Confidence Intervals for a Difference Between Two Population Means 9.2 The Two-Sample t Test and Confidence Interval	Homework Assignments
Class 19	9.3 Analysis of Paired Data 9.4 Inferences Concerning a Difference Between Population Proportions	Homework Assignments
Class 20	9.4 Inferences Concerning a Difference Between Population Proportions 9.5 Inferences Concerning Two Population Variances	Homework Assignments
Chapter 10 The Analysis of Variance		
Class 21	10.1 The Analysis of Variance	Quiz 5 Homework Assignments
Class 22	10.2 Multiple Comparisons in ANOVA	Homework Assignments
Chapter 12 Simple Linear Regression and Correlation		
Class 23	12.1 The Simple Linear Regression Model 12.2 Estimating Model Parameters	Homework Assignments
Class 24	12.3 Inferences About the Slope Parameter b1 12.4 Inferences Concerning $\mu_{Y\cdot x^*}$ and the Prediction of Future Y Values	Homework Assignments
Class 25	12.5 Correlation Review for Final Exam	Homework Assignments
Final exam (Cumulative) TBA		