



STAT 2110: Applied 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:

This course provides an introduction to the fundamental concepts of applied statistics. Topics covered include design of observational studies, industrial simulation, randomness, distribution functions, conditional probabilities; derivation of common discrete distributions; sampling, regression and correlation analysis, curve fitting, chi-square analysis, test of significance; expectation operator; statistics as random variables, point and interval estimation; maximum likelihood estimators; properties of estimators.

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 7 quizzes administered through the whole semester and the two lowest scores will be dropped. 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 out of 7)	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-	93-	90-	88-	83-	80-	78-	73-	70-	68-	63-	60-	<60
100	97	92	89	87	82	79	77	72	69	67	62	

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.



Course Schedule:

Class 1:

Course Overview
Go through Syllabus
Review of math

Class 2:

Displaying Distributions with Graphs
Describing Distributions with Numbers

Class 3:

Density Curves and Normal Distributions
Design of Experiments

Class 4:

Quiz 1
Design of Experiments (Cont.)
Sampling Design

Class 5:

Toward Statistical Inference
Ethics
Randomness

Class 6:

Ethics (Cont.)
Randomness (Cont.)
Probability Models

Class 7:

Quiz 2
Random Variables
Means and Variances of Random Variables

Class 8

General Probability Rules
Review for midterm 1

Class 9:

Midterm Exam 1

Class 10:

Sampling Distributions for Counts and Proportions
The Sampling Distribution of the Sample Mean



Class 11:
The Sampling Distribution of the Sample Mean (Cont.)
Estimating with Confidence

Class 12:
Quiz 3
Tests of Significance
Use and Abuse of Tests

Class 13:
Power and Inference as a Decision
Inference for the Mean of a Population
Comparing Two Means

Class 14:
Comparing Two Means (Cont.)
Optional Topics in Comparing Distributions

Class 15:
Quiz 4
Optional Topics in Comparing Distributions (Cont.)
Inference for Two-Way Tables

Class 16:
Formulas and Models for Two-Way Tables
Goodness of Fit
Scatter plots

Class 17:
Correlation
Least Squares Regression
Review for Midterm 2

Class 18:
Midterm Exam 2

Class 19:
Cautions about Correlation and Regression
Data Analysis for Two-Way Tables

Class 20:
Quiz 5
The Question of Causation
Simple Linear Regression



Class 21:
Simple Linear Regression (Cont.)
More Detail about Simple Linear Regression

Class 22:
Quiz 6
More Detail about Simple Linear Regression (Cont.)
Inference for Multiple Regressions

Class 23:
Inference for Multiple Regressions (Cont.)
Case Studies on regression

Class 24:
Quiz 7
Inference for One-Way Analysis of Variance
Comparing the Means

Class 25:
Wrap-up
Review for Final

Final Exam (Cumulative): TBA