DAVIS UNIVERSITY

COURSE SYLLABUS

MTH335: STATISTICAL METHODS

COURSE SYLLABUS FOR: MTH335 STATISTICAL METHODS

CREDIT HOURS: 5 CREDITS

INSTRUCTOR:

INSTRUCTOR EMAIL:

INSTRUCTOR OFFICE HOURS:

COURSE DESCRIPTION: Topics include basic concepts of probability, normal and binomial distributions, hypothesis testing, confidence intervals, Correlation and Regression, and chi-square distribution.

PREREQUISITES: Elementary Calculus

TEXT: Peck, Olsen and Devore, Introduction to Statistics and Data Analysis, 3rd edition, Brooks/Cole.

PLAGIARISM AND COPYRIGHT INFRINGEMENT POLICY: Work that is found to be plagiarized receives a grade of zero and often causes a student to fail a class. Documentation of plagiarism is added to the student's academic file as a violation of accepted student conduct and is subject to disciplinary action. Plagiarism is the use of another person's exact words, or their ideas written in the student's words without giving the original author credit.

Plagiarism can result from any of the following:

- Quote material directly without using quotation marks.
- Paraphrase the original so that many of the phrases are the same as the original. A good rule is no more than 3 or 4 words in a row should be the same as the original.
- Copy the original sentence pattern, substitution synonyms for key words.
- Neglect to indicate the source of the original material.

ASSESSMENTS:

Content	
Homework	23%
Module Quizzes	36%
Midterm	11%
Final exam	30%
Total	100%

COURSE GRADE:

Letter Grade	**Range**	**GPA**
A+	97–100	4.0
A	93-96	4.0
A−	90–92	3.7
B+	87–89	3.3
B	83–86	3.0
B−	80–82	2.7
C+	77–79	2.3
C	73–76	2.0
C−	70–72	1.7
D+	67–69	1.3
D	63–66	1.0
D−	60–62	0.7
F	Below 60	0.0

TENTATIVE COURSE OUTLINE:

(Subject to change)

Module/Units	Content Covered	Assignments & Assessment
Module 1	Chapter 1: Introduction to Statistics ● What is statistics? ● Populations, samples, variables ● Types of data ● Observational vs. experimental studies ● Sampling designs (simple random, stratified, cluster, systematic) ● Bias and survey pitfalls	Homework 1 Quiz 1
Module 2	Chapter 2: Collecting Data Sensibly ● Types of data and variables (categorical vs. quantitative) ● Populations, samples, and parameters vs. statistics ● Sampling methods and sources of bias ● Observational studies versus experiments ● Principles of good study design and data collection	Homework 2 Quiz 2
Module 3	Chapter 3: Graphical Methods for Describing Data ● Dotplots and stem-and-leaf displays ● Histograms and frequency distributions ● Bar charts, pie charts, and time series plots ● Identifying shape, center, spread, and outliers from graphs ● Recognizing misleading or poorly constructed graphs	Homework 3 Quiz 3
Module 4	Chapter 4: Numerical Methods for Describing Data ● Measures of center (mean, median, mode) ● Measures of variability (range, variance, standard deviation, IQR) ● Percentiles, quartiles, and the five-number summary ● Identifying and interpreting outliers numerically ● Choosing appropriate numerical summaries for different distributions	Homework 4 Quiz 4

Module 5	Chapter 5: Summarizing Bivariate Data ● Scatterplots and interpretation of association ● Direction, strength, and form of relationships ● Correlation and its properties ● Cautions about interpretation, including association vs. causation	Homework 5 Quiz 5 Midterm
Module 6	Chapter 6: Probability ● Basic probability concepts and sample spaces ● Probability rules, including complements and unions ● Disjoint and independent events ● Conditional probability ● Tree diagrams and probability for compound events	Homework 6 Quiz 6
Module 7	Chapter 7: Random Variables and Probability Distributions ● Definition of random variables ● Discrete versus continuous random variables ● Probability distributions and distribution properties ● Expected value, variance, and standard deviation ● Common discrete distributions and interpretation	Homework 7 Quiz 7
Module 8	Chapter 9: Confidence Intervals ● Confidence intervals for population means (z and t) ● Confidence intervals for population proportions ● Interpreting confidence level and confidence intervals ● Choosing sample size	Homework 8 Quiz 8
Module 9	Chapter 13: Simple Linear Regression, Correlation and Inference for Two Groups ● Review of correlation and linear association ● Simple linear regression models and interpretation ● Least-squares regression line and residuals ● Using regression for prediction and the risks of extrapolation ● Interpreting regression results and correlation with caution ● Comparing group means and proportions	Homework 9 Quiz 9 Final Exam