STAT 021: Applied Statistics

Term: 2020 Winter Session Instructor: Staff Language of Instruction: English Classroom: TBA Office Hours: TBA
Class Sessions Per Week: 6 Total Weeks: 4 Total Class Sessions: 25 Class Session Length (minutes): 145 Credit Hours: 4

Course Description:

We will discuss in this course a variety of topics including sampling; randomness; distribution functions; test of significance; conditional probabilities; derivation of common discrete distributions; correlation analysis; curve fitting; regression; analysis of variance; chi-square analysis; expectation operator; properties of estimators. Upon completing the course, students will develop a comprehensive understanding of statistical theories and apply them to issues of the real world.

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.

Grading Scale:

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

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.

Midterm Exams

There will be two midterm exams in this course. The midterm exam will be based on concepts covered in class. It 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%**

Course Schedule:

Week 1- Class 1	Week 1- Class 2
Course Overview Go through Syllabus Review of Math	Displaying Distributions with Graphs Describing Distributions with Numbers Density Curves and Normal Distributions
Week 1- Class 3	Week 1- Class 4
Density Curves and Normal Distributions Design of Experiments	***Quiz 1*** Design of Experiments (Cont.) Sampling Design Toward Statistical Inference
Week 1- Class 5	Week 1- Class 6
Ethics, Randomness	***Quiz 2*** Ethics (Cont.) Randomness (Cont.) Probability Models
Week 2- Class 7	Week 2- Class 8
Random Variables Means and Variances of Random Variables	General Probability Rules Review for midterm 1
Week 2- Class 9	Week 2- Class 10

Midterm Exam 1	Sampling Distributions for Counts and Proportions The Sampling Distribution of the Sample Mean
Week 2- Class 11	Week 2- Class 12
Estimating with Confidence Tests of Significance Use and Abuse of Tests	***Quiz 3*** Tests of Significance Use and Abuse of Tests Power and Inference as a Decision
Week 2- Class 13	Week 2- Class 14
Inference for the Mean of a Population Comparing Two Means	***Quiz 4*** Optional Topics in Comparing Distributions Inference for Two-Way Tables Formulas and Models for Two-Way Tables
Week 3- Class 15	Week 3- Class 16
Formulas and Models for Two-Way Tables Goodness of Fit Scatter plots Correlation	***Quiz 5*** Correlation, Least Squares Regression
Week 3- Class 17	Week 3- Class 18
Cautions about Correlation and Regression Data Analysis for Two-Way Tables	***Midterm Exam 2***
Week 3- Class 19	Week 3- Class 20
Data Analysis for Two-Way Tables The Question of Causation	Simple Linear Regression More Detail about Simple Linear Regression
Week 4- Class 21	Week 4- Class 22
Quiz 6 Inference for Multiple Regressions	CASE STUDIES on regression
Week 4- Class 23	Week 4- Class 24
Quiz 7	Comparing the Means

Inference for One-Way Analysis of Variance	
Week 4- Class 25	***Final Exam (Cumulative): TBA***
Wrap-up Review for FINAL EXAM	

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 Shanghai Normal University'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.