



**University of International Business and Economics
International Summer School**

STAT 220 Introduction to Statistics

Term: September 20th – December 10th, 2021

Instructor: Shen Fan

Home Institution: China University of Petroleum

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Class Hours: 2 days per week, 120 minutes each teaching day (2,400 minutes in total)

Office Hours: TBD

Discussion Session: 2 hours each week

Total Contact Hours: 64 contact hours (45 minutes each, 48 hours in total)

Credit: 4 units

Course Description:

Statistics is the study of data and how it can be collected, organized, analyzed and interpreted to obtain insights. Descriptive statistics focuses on organizing and summarizing data so that it is better understood. Inferential statistics leverages data from a small group to arrive at conclusions about the entire population of which the small group is a part. Statistics is part of everyday life. One of the most sought-after job areas these days is business analytics, which refers to the application of statistics to obtain important insights from data available to organizations. This course provides a calculus-based introduction to statistics.

Course Goals:

We will first introduce data and statistics, data presentations, measures of centrality and variation, discrete and continuous probability, hypothesis testing for populations and parameters, Chi-square tests, analysis of variance.

Prerequisites:

At least one semester of calculus is required; two or three semesters are strongly recommended.

Required Textbook:

De Veaux, Velleman and Bock, Stats: Data and Models, Pearson, ISBN 13: 978-1-292-10163-7

Grading Policy:

Grading will be determined by homework and the results of your exams. Homework 30%, Midterm Exams 30%, Final Exam 40%.

Grading Scale:

Assignments and examinations will be graded according to the following grade scale:

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|----|--------|----|----------|
| A | 90-100 | C+ | 72-74 |
| A- | 85-89 | C | 68-71 |
| B+ | 82-84 | C- | 64-67 |
| B | 78-81 | D | 60-63 |
| B- | 75-77 | F | below 60 |

Course Schedule:

Week 1:

DAY 1: What are Statistics? Displaying and Describing Categorical Data

DAY 2: Quantitative Data, Distributions

Week 2

DAY 1: Standard Deviation, Scatterplots

DAY 2: Linear Regression, Regression Wisdom

Week 3

HOLIDAY

Week 4

DAY 1: Re-expressing data, Randomness

DAY 2: Sample Surveys, Experiments and Observational Studies

Week 5

DAY 1: Review first 12 chapters and First tests

DAY 2: Probability, Probability Rules

Week 6

DAY 1: Random Variables

DAY 2: Probability models

Week 7

DAY 1: Sampling Distribution Models,

DAY 2: Confidence Intervals, Testing Hypotheses

Week 8

DAY 1: Inference about Means, Tests and intervals

DAY 2: Comparing Groups

Week 9

DAY 1: Paired Samples and Blocks, Comparing counts



DAY 2: Inferences for Regression

Week 10

DAY 1: Analysis of variance

DAY 2: Multifactor Analysis of Variance

Week 11

DAY 1: Multiple Regression

DAY 2: Final Exam.

Week 12

Course Wrap-up