# 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)**
**Location: WEB**
**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:

| 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