**100171301 Probability Theory and Mathematical Statistics**

**Lecture Hours: 48**

**Laboratory Hours: 0**

**Credits: 3**

**Prerequisite(s): Calculus**

**Course Description:**

This course is a common basic course for undergraduate students, and it is a mathematical course to study the random phenomena. This course provides an elementary introduction to probability and statistics with applications. Topics include: basic probability models, random variables, discrete and continuous probability distributions, law of large numbers, central limit theorem, statistical estimation and testing. Probability and mathematical statistics have a very wide range of applications. In this course, we will give some introduction about the basic concepts, theories and methods in probability theory and mathematical statistics. The purpose of this course is to familiarize students with main methods of probability and statistics to deal with practical problems and even to lay some foundation for the forthcoming study.

**Course Outcomes:**

After completing this course, a student should be able to

1. Familiarize with main methods of probability theory and mathematical statistics.

2. Design probability model and statistical model in many fields.

3. Use probability and mathematical statistics to deal with practical problems.

4. Lay some foundation for the forthcoming study.

**Course Content:**

**Lectures and Lecture Hours:**

Chapter 1 Basic Concepts of Probability 8

Chapter 2 Random Variables and Distributions 8

Chapter 3 Multivariate Random Variables and Distributions 8

Chapter 4 Digital Characteristic of the Random Variable 8

Chapter 5 Law of Large Numbers and Central Limit Theorem 2

Chapter 6 Sample and Sampling Distributions 4

Chapter 7 Parameter Estimation 6

Chapter8 Hypotheses Testing 6

**Grading:**

1 Regular Grade( Homework，Quiz，Attendance): 20%—30%

2 Final Exams: 70%~80%

**Text & Reference Book:**

Sheng Zhou, Xie Shiqian, Pan Chengyi, Probability and Mathematical Statistics , 4th ed., 2008, ISBN 978-7-04-023896-9.