Second Course in Statistics

Reference books:

1. Statistical inference 2nd ed. George Casella and Roger L. Berger. Chapter 1, 1.1-1.3 except 1.2.2, chapter 3 3.1-3.4

2. A first course in probability 5th ed. Sheldon Ross. Chapter 1, chapter 2, 2.1-2.5, chapter 3 3.1-3.4

3. Understanding statistics 6th ed. R. Lyman Ott and William Mendenhall. Chapters 6-13 and

4. Introduction to the practice of statistics 5th ed. David S. Moore and George P. McCabe. Chapters 5-13, 15

Course description:

- Probability law, conditional probability and Bayesian rule.

- Principles and methods of counting.

- Characteristics of probability distributions: mean, variance and covariance.

- Discrete probability distribution: Bernoulli, Binomial, Geometric, Poisson, Negative Binomial distribution.

- Continuous probability distributions: Exponential, Normal, Student t, F, and Chi-square distribution.

- Confidence interval estimation of population mean and variance.

- Hypothesis testing of population mean and variance from sample(s): test statistics, level of significance, power of the test, and decision errors.

- Estimation of dependency between variables.

- Mann-Whitney test for comparing two population means.

- Analysis of variance (ANOVA) to estimate population means from more than two samples.

- Multiple regression.