

ECO 105 (2015 Spring Semester): Economic Statistics (section 1)

1. **Time:** Monday 9:00 am-10:20 am and Tuesday 10:30 am-11:50 am
2. **Place:** 101
3. **Instructor:** Kun Ho Kim
4. **Required Textbook:** None.
5. **Recommended Textbook:** *Statistics for Business and Economics*, 11th Edition by Anderson, Sweeney and Williams (ASW hereafter)
6. **Course Description:** ECO 105 introduces students an introductory level of probability and statistical analysis. In comparison to general statistics courses, the course is intended to cover topics more relevant to the areas of economic science. The emphasis in the course will be also on hands-on experience of using course material to analyze real world data. In particular, developing skills essential to empirical analysis of various data should be the main goal of the course.

The specific topics of the course include: basic probability concepts, discrete and continuous random variables, probability distributions, joint probability distributions, point estimation, confidence intervals based on a single sample, confidence intervals based on multiple samples and hypothesis testing.

7. **Course Schedule:**

Part1. Descriptive Statistics

- 1.1. Summarizing data: ASW, CH 2.1-2.4
- 1.2. Measure of Location: ASW, CH 3.1
- 1.3. Measure of Variability: ASW, CH 3.2
- 1.4. Measures of association between two variables: ASW, CH 3.5

Part2. Probability

- 2.1. Counting Techniques: ASW, CH 4.1
- 2.2. Sample Spaces and Events: ASW, CH 4.2
- 2.3. Axioms, Interpretations, and Properties of Probability: ASW, CH 4.3
- 2.4. Conditional Probability: ASW, CH 4.4
- 2.5. Bayes' Theorem: ASW, CH 4.5

Part3. Discrete Probability Distributions

- 3.1. Random Variables: ASW, CH 5.1
- 3.2. Probability Distributions for Discrete Random Variables: ASW, CH 5.2
- 3.3. Expected Values: ASW, CH 5.3
- 3.4. Binomial Probability Distribution: ASW, CH 5.4
- 3.5. Poisson Probability Distribution: ASW, CH 5.5

Part4. Continuous Probability Distributions

- 4.1. Probability Density Functions: ASW, CH 6.1
- 4.2. The Uniform Distribution: ASW, CH 6.1
- 4.3. The Normal Distribution: ASW, CH 6.2-6.3
- 4.4. The Exponential and Gamma Distributions: ASW, CH 6.4

Part5. Random Samples

- 5.1. Simple Random Sampling: ASW, CH 7.2
- 5.2. Point Estimation: ASW, CH 7.3
- 5.3. The Distribution of the Sample Mean: ASW, CH 7.5
- Part6. Confidence Intervals
 - 7.1. Basic Properties of Confidence Intervals: ASW, CH 8.1
 - 7.2. Interval Estimation of a Population Mean: ASW, CH 8.1-8.2
- 6.3. Determining the Sample Size: ASW, CH 8.3-8.4
- Part7. Hypothesis Testing
 - 7.1. Null and Alternative Hypotheses: ASW, CH 9.1
 - 7.2. Type I and Type II Errors: ASW, CH 9.2
 - 7.3. One-tailed Test of a Population Mean: ASW, CH 9.3
 - 7.4. Two-tailed Test of a Population Mean: ASW, CH 9.4

7. Grading:

There will be several quizzes, one mid-term exam and a final exam in this course. There will be NO make-up exams in this class. The relative weighting is: attendance 5%, quizzes 20%, mid-term exam 30% and final exam 45%.