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Course Description

The current course will provide a thorough presentation of basic statistical methods used in social science to empirically identify the behavior of any phenomenon. The decision-making process involves uncertainty and therefore anyone who wants to propose a solution must have a supporting mechanism which is going to base on some kind of quantitative analysis. Thus, this course is very important because students will understand how quantitative, and in particular statistical, analysis works in social science in terms of determining behaviors. The tools students will learn in this course will allow them to analyze data and derive policy conclusions.

The course will be taught in a self-contained way and therefore all materials needed for a good understanding of the concepts of this course will be presented in class. **Students do not need to worry about their statistical or econometric background.** The course will provide brief reviews of background concepts and small proofs when needed. **Emphasis in the course will be given in presenting and understanding the techniques and discussing the results of using real data.** The course will not focus on memorizing mathematical derivations and proofs of several theorems.

Learning Objectives

After you complete this course, you should be able to understand the importance of statistical analysis in terms of:

- Identifying, meaning that you should be able to recognize behaviors based on previous experience.
- Testing, meaning that you should be able to verify behaviors.
- Drawing Conclusions, meaning that you will be able to support strategies and objectives.

Statistical analysis is by far the most important tool in any quantitative analysis used to derive conclusions.

Recommended Textbooks

Agiakloglou, M. Christos and Economou, S. George, *Methods for Forecasting and Decision Analysis*, 2011, Benos, Athens.

Agiakloglou, M. Christos and Benos, E, Theofanis, *Basic Principles of Econometric Analysis*, 2015, Benos, Athens.

Newbold, Paul *Statistics for Business and Economics*, Prentice Hall, New Jersey, 1991.

Newbol, P., Carlson, W. L. and Thorne, B. *Statistics for Business and Economics*, 6th edition, Pearson Prentice Hall, 2006.

Newbold, P. and Bos, T. *Introductory Business Forecasting*, South-Western Publishing Co, 1990.

Course Outline

This outline represents the order of topics to be covered in this course:

1. Introduction to Statistics
2. Measurements of Central Tendency and Dispersion (Original Data).
3. Measurements of Central Tendency and Dispersion (Grouped Data).
4. Probability
5. Bivariate Case
6. Discrete Random Variable – Expected Value and Variance
7. Covariance - Correlation
8. Continuous Random Variable
9. Distributions of Continuous random variables
10. Confidence Intervals for Mean and Variance
11. Hypothesis Testing for Mean and Variance
12. General Concepts in Decision Making

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