Preparatory in Statistics
M.Sc. in Finance and Banking
Athens University of Economics & Business
Instructor: Prof. Antonis Demos

Aims and objectives:

The aim of this course is to refresh students' knowledge on probability and statistics. It covers topics on probability, conditional probability, random sampling, properties of estimators, point and interval estimation, hypothesis tests of a single population, tests on the mean of a normal population (variance known and unknown), as well as tests of population proportions.

At the end of the course, the students will be able to apply the Laws of probability and estimate various moments, either static or dynamic, from a random sample. They will be also able contact tests of the a mean, either one- or two-sided, from a normal random.

Course outline and reading list

1. **Random Variables and their Probability Distributions**
   (Probability Definition and Properties. Conditional Probability and Independence. Discrete and Continuous Random Variables. Joint Distributions, Conditional Distributions, and Independence)

2. **Moments of Random Variables**
   (Expected Value, Median, Variance, Skewness, Kurtosis, Covariance, Correlation, and Conditional Moments)

3. **The Normal and Related Distributions**
   (Normal, Student-t, Chi-square, F)

4. **Point and Interval Estimation**
   (Moment and Maximum Likelihood Estimators. Finite Sample Properties of Estimators. Confidence Intervals for the Mean from a Normally Distributed Population)

5. **Hypothesis Testing**
   (Testing the Mean from a Normally Distributed Population, Testing Proportions)

Text Books:

Newbold, P., W.L. Carlson and B.M. Thorne, "Statistics for Business and Economics",8th Edition, Pearson.

Anderson D.R., D.J. Sweeney and T.A. Williams, “Statistics for Business and Economics”, 11th Edition, South-Western.
Hill, R.C., W.E. Griffiths and G.C. Lim, “Principles of Econometrics” 4th Edition J. Wiley and Sons.