

## **Course: Probability and Statistics program**

1. Basic concepts of set theory, events, sample spaces (discrete and continuous). Elements of combinatorics (factorial operator, permutation, combinations, combinations with repetition). Definition of probability.
2. Conditional probability. Total probability. Statistical independence of events. Bayes' Theorem.
3. Random variables, probability distributions and mass functions. Some important distributions. Mean and variance of a random variable.
4. Observed data and graphical representation. Measures of descriptive statistic.
5. Statistical methods. Estimation, confidence intervals.
6. Statistical tests of hypotheses.
7. Regression models. Introduction to Statistica 9.0 of StatSoft
8. Test.

### **Bibliography:**

- Montgomery, D., Runger, G. **Applied Statistics and Probability for Engineers.** John Wiley & Sons 2003
- Soong, T. T. **Fundamentals of Probability and Statistics for Engineers.** John Wiley & Sons 2004