

Course Syllabi

1. MAES-00129 PROBABILITY AND STATISTICS

2. 96 credits hours.

3. Bibliography

- Probabilidad y estadística para ingeniería y ciencias, Walpole Ronald E. Myers Raymond H., Myers Sharon L., Ye Keying, 2012
- Applied statistics and probability for engineers, Montgomery, D.C., Runger, G.C., 2014
- Introductory Statistics with R, Statistics and Computing, Dalgaard, P., 2008

4. Specific Course Information

- a. The statistics are first addressed as a tool for the treatment of collected information, its analysis and presentation of variability of it. In a second component, Probability is included as the sustenance for the modeling of random variables, which allows the understanding of the techniques of statistical inference. The conjunction of descriptive statistics with probability, allows to understand the existing relationship between sample and population, as well as starting from li The course includes the estimation of population parameters through confidence intervals, as well as hypothesis tests on them.
- b. Prerequisites:
 - MAES-00124 LINEAR ALGEBRA
 - IDIO-00064 LANGUAGE AND TECHNICAL COMMUNICATION
 - MAES-00119 DIFFERENTIAL CALCULUS
 - MAES-00126 DISCRETE MATHEMATICS
 - HUMA-00114 SOCIETY, CULTURE, AND TERRITORY
 - TICS-00049 INTRODUCTION TO ENGINEERING

5. Learning Objectives of the Course

- a. To know the ways to compile, characterize and present information on statistical variables of interest; and with the mathematical tools of probability and modeling of random variables they can perform inferences on the population parameters that lead to the making of scientific
-technical decisions based on the information collected knowing the risk of error.
- Compile, characterize and represent in tabular, graphical and numerical form the distributions of frequencies of stage variables statistics.
- Use probability and random variables as a model of statistical variables.
- b. Learning Outcomes
 - Represents frequency distributions in tabular, graphic and numeric form
 - It knows the main aspects of simple linear regression.
 - It interprets probability and applies it to different problems.
 - Determines confidence intervals (ci) for population parameters from samples.
 - It uses the main types of discrete and continuous random variables, such as statistical variables models.
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 - It interprets probability and applies it to different problems.
 - He knows the techniques to apply different tests of statistical hypotheses that guide decision-making in engineering problems.
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6. Course Topics

- Introduction
- Description statistics: characteristics and variability
- Likelihood
- Alternative variables and distributions of likelihood
- Variable continuous alleteries and problems of problems
- Timely estimation of parameters
- Trust intervals for simple samples
- Hypothesis tests for simple samples
- Statistical inferences for two samples and simple return