

Probability and Statistics A

Calendar: 2nd day semester

Contact Hours: 45h00 TP

Scientific Area: Matemática e Informática

Learning outcomes of the curricular unit

Students should be able to apply statistical description methods, including both univariate and bivariate analysis, in common engineering applications.

Syllabus

Univariate Descriptive Statistics Review Exploratory data analysis. Discrete and continuous data; Frequency tables; Measures of location, variability, skewness and kurtosis; Graphs: pie, bar, histogram, stem-and-leaf and boxplots; Outliers. Probability Calculus : Sample space, events. Event probability; Additive rules. Conditional probability. Multiplicative rules; Bayes' rule and Bayes' theorem. Random variables and probability distributions : Some discrete distributions: uniform, binomial, poisson and hypergeometric; Some continuous distributions: uniform, normal, chi-squared and t-student. Bivariate Statistical: Simple linear regression and data plots. Least squares estimators; Correlation coefficients: Pearson, Spearman and bi-serial point; Coefficient of association: Phi and Cramer. Inferential Statistics : Point and interval estimation for unknown population parameter; Confidence intervals for population mean.

Demonstration of the syllabus coherence with the curricular unit's objectives

The various techniques of data analysis that a student should be able to manipulate on completing the curriculum unit are included in the syllabus.

Teaching methodologies (including evaluation):

The teacher uses theory-practical lessons. Cooperative classroom. Active Learning in the form of written and oral activities carried out individually, in pairs or larger groups during class-time.

Demonstration of the coherence between the teaching methodologies and the learning outcomes.

The teaching methodology, opted on problem solving, and whenever possible, with real situations, in order to prepare students for any situation.