Statistics and Probabilities A

Calendar: 2nd semester
Contact Hours: TP – 45,0h; OT – 7,5h
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:
Univariates 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-lead and boxplots; Outliers. Probability Calculus : Sample space, events. Event probability; Additives 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; Correlations 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 curricular unit are included in the syllabus.

Teaching methodologies
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.