

Materia 4_02: Statistical models for decision making

Materia:	Statistical models for decision making	ECTS:	10
Descriptor	<ul style="list-style-type: none"> • Exploratory statistical techniques in Data Science: univariate, bivariate and multivariate. Data acquisition and preprocessing. Advanced data wrangling: Transformations, outliers, missing values, sources, integration. Categorical data processing and analysis. Other probability distributions in Data Science. Statistical Inference. • Parametric Models in Data Science: Complex ANOVA models, Advanced Multiple regression, Logistic Regression, Generalized linear model, Nonlinear regression. Adjustment and validation models. Non-parametric Models in Data Science. 		
Objetivos generales	This subject has the objective of achieving the basic knowledge necessary to be able to carry out an exploratory analysis of data in any field.		
Competencia específica	CE [4-02] Collect and interpret relevant data (usually within their field of study) to make judgments that include reflection on relevant issues of a social, scientific, or ethical nature		
Resultados de aprendizaje	<ul style="list-style-type: none"> • Describe graphically and numerically the information contained in quantitative and qualitative variables, at a multi-dimensional level. • Clean and prepare complex dataset for exploration and analysis to find data errors and inconsistencies. • Transform between different types of random variables: continuous variables to discrete variables and vice versa. • Identify and use other types of statistical probability distributions not so common but used in certain contexts. • Use in the context of statistical inference, simple models that allow decision-making in elementary problems. • Choose the most appropriate parametric analysis model for the problem to solve. • Obtain the operating conditions that allow to optimize the analyzed response variable. • Understand and explain the different stages of formulation, estimation, validation, and maintenance of the proposed model, given a problem. • Select the most appropriate statistical model for the analyzed variable according to some criteria of goodness of fit. • Make predictions of the response variable, measuring the uncertainty of this prediction. • Comprehend the provided information offered by the estimated statistical model in the problem context. • Identify the need to use a non-parametric statistical model and choose the one appropriate to a given problem. 		
Métodos de evaluación	<ul style="list-style-type: none"> • Evaluation: Written open-ended test and Problems • Assessment instruments: Checklists and Rating Scales 		