Analysis Techniques in Psychological Research

Brief description of course content (According to the programme's verification report)

Descriptors:

Hypothesis estimation and testing; Parametric and Non-parametric Tests; Research Techniques and Designs; Multivariate Data Analysis.

Contents:

Hypothesis formulation and testing. Parametric contrasts. Hypothesis formulation and testing. Non-parametric contrasts. Inference in regression models. Models with categorical independent variables. Models with continuous and categorical independent variables. Models with dependent errors. Multivariate analysis in psychological research.

Learning outcomes

- To understand the statistical models for making inferences.
- To understand the analysis techniques associated with the different types of research designs in Psychology.
- To understand data analysis in programme assessment.
- To learn to analyse data in psychological programmes and interventions.

Planned learning activities
Theory Syllabus

Topic 1.- Inference.

Introduction. Basic concepts. Sampling distributions. Sampling. Methods of sampling.

Topic 2.- Estimation

Objective and basic concepts of estimation. Point estimation. Methods of constructing estimators. Properties of estimators. Interval estimation.

Topic 3.- Hypothesis testing.

Scientific method and hypothesis testing. The logic of testing. Power function. Type I and II errors. Confidence level. Power and effect size. Parametric contrasts. Significance testing. Equality of means testing. Hypothesis testing for other parameters. Non-parametric contrasts.

Topic 4.- Variance analysis I

Statement of the problem. Sampling distributions in variance analysis. Assumptions. Total partition of sums of squares. Significance testing. Random effects model. Variance components. Multiple posterior comparisons. Repeated measures model. Advantages of intra-subject designs.

Topic 5.- Variance analysis II

Introduction to factorial designs. Main effects and interactions. Significance testing for the interaction. Comparisons. Mixed ANOVA. Higher order variance analysis.

Topic 6.- Regression and multiple correlation.

The multiple linear regression model. Hypothesis about the model. Point estimation of equation parameters. Confidence intervals and testing regression coefficients. Partial and multiple correlation.

Practical Syllabus

Practical exercise 1. To illustrate distribution in the sampling of estimators by means of examples. Carry out interval estimations.

Practical exercise 2. To analyse real research situations in Psychology, establishing the parametric and sampling space. To make hypotheses and establish them as null and alternative hypotheses.

Practical exercise 3. To perform parametric testing which refer to real psychological issues.

Practical exercise 4. To develop a linear model which explains performance in the subject area and to analyse its components.

Practical exercise 5. To posit and contrast hypotheses about a linear model.

Practical exercise 6. To perform one-way variance analysis testing using a generalized linear model.

Practical exercise 7. To perform two-way variance analysis using the generalized linear model.

Practical exercise 8. To estimate the parameters of a regression model using experimental data.