

569823	Inferential statistics applied to experimental research designs [5 ECTS – OBL.]	Joan C. Mora
--------	---	---------------------

Course Description

This course will introduce the basic inferential statistical techniques most commonly used in experimental research in second language acquisition and applied linguistics. Students will learn how to apply statistics to the analysis of linguistic data from a practical hands-on approach using real data sets. The SPSS statistical package will be used to analyse linguistic data from various types of research studies. The course will specially focus on the selection of appropriate statistical procedures and tests for the analysis of data sets in the students' own research in order to answer specific research questions. Course attendants will also learn to interpret and report statistical results appropriately.

Syllabus

1. Overview of key concepts in experimental research design.
 - Populations and samples
 - Variables types
 - The analysis of experimental and control groups and conditions.
 - By-items and by-subjects analyses
 - Planning the statistical analysis of a study

2. Relationships between variables
 - Correlational analysis
 - Reliability analysis
 - Multiple regression
 - Simple
 - Hierarchical
 - Presenting and reporting the results of regression

3. Comparing groups and conditions through T-tests.
 - Paired-samples t-tests
 - Independent samples t-tests
 - Non-parametric tests
 - Presenting and reporting the results of t-tests

4. Analysis of Variance (ANOVAs) between groups
 - One-way (between groups).
 - Two-way (between groups).
 - Interpreting and explaining interactions
 - Post-hoc tests
 - Non-parametric tests
 - Presenting and reporting the results of ANOVAs

5. Analysis of Variance (ANOVAs) within groups
 - One-way (repeated measures).
 - Two-way (repeated measures).
 - Bonferroni-adjustment
 - Interpreting and explaining interactions
 - Analysis of simple main effects
 - Non-parametric tests
 - Presenting and reporting the results of ANOVAs

6. Mixed analysis of variance (between and within groups).
 - Interpreting and explaining interactions
 - Post-hoc tests
 - Pairwise comparisons
 - Presenting and reporting the results of ANOVAs
7. Multivariate analysis of variance and Analysis of covariance
 - MANOVA
 - ANCOVA
8. Linear Mixed Models
 - LMM
 - GLMM

Methodology

This is a practical course structured along three types of task:

(1) Introductory tasks that include: identifying variables in research design, basic exercises of data management in SPSS, and the selection of appropriate statistical tests according to different research designs (20% of final mark).

(2) Applying specific statistical tests to linguistic data sets and presenting the results of correlations, regressions, t-tests and ANOVAs (20% of final mark).

(3) Data analysis task. In this task students will be given a raw linguistic data set and its description. Students will be required to answer a set of research questions based on this data set. In order to answer the research questions new variables will need to be created and several different statistical analyses will have to be performed on the data. The research questions need to be answered by providing a report of the results of the statistical tests (50% of final mark)

Assessment

Continuous assessment: Active participation in class (10%), homework (40%) and the data analysis task (50%).

Essential bibliography

Field, A. (2013) *Discovering Statistics Using IBM SPSS Statistics* (4th ed). London: Sage.

Larson-Hall, J. (2010) *A Guide to Doing Statistics in Second Language Research Using SPSS*. New York: Taylor & Francis.

Pallant, J. (2010) *The SPSS Survival Guide* (5th ed). Maidenhead: Open University Press.

Tabanick, B. G. & Fidell, L. S. (2013) (6th ed) *Using Multivariate Statistics*. Boston: Pearson.