60854 - Data analysis

Teaching Plan Information

Academic year: 2024/25
Subject: 60854 - Data analysis
Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte
Degree: 549 - Master's in Evaluation and Physical Training for Health
ECTS: 3.0
Year: 1
Semester: Second semester
Subject type: Optional
Module:

1. General information

Statistical data analysis is essential in scientific research. It allows accurate descriptions and predictions based on known and measured conditions. The subject is essential to successfully write a doctoral thesis or pursue a professional career in research or innovation. It teaches how to implement appropriate strategies of statistical analysis considering objectives, hypotheses and nature of the variables studied.

In particular, it deals with essential skills for collecting, analysing, visualizing and interpreting statistical variables. Students will acquire skills in the use of statistical analysis software, identification of relationships between variables as well as reporting the results and conclusions of the analysis.

2. Learning results

- To know the fundamental concepts of data analysis and description.
- To understand and manage autonomously the analysis of unidimensional and *n-dimensional* statistical data: how to select, collect, tabulate, visualize and interpret statistical variables.
- To graphically represent the results derived from the application of statistical techniques.
- To identify and analyse relationships and associations between variables.
- To use statistical data analysis software in a correct and rational manner.
- To interpret the results derived from the application of statistical techniques and judge their appropriateness to the research design.
- To prepare a report with the results and conclusions of the statistical analysis of data.

3. Syllabus

Block 1. Introduction to data analysis.

- Fundamental concepts of statistical data analysis.
- Creation and basic management of databases.

Block 2. Univariate Descriptive Statistical Analysis.

- Tabular summaries and summary measures.
- Graphical representations.

Block 3. Bivariate Descriptive Statistical Analysis.

- Measures of association and bivariate tabulation.
- Bivariate graphical summaries.

Block 4. Statistical inference.

- Parametric and nonparametric hypothesis testing.

Block 5. Introduction to Multivariate Analysis.

- Basic concepts and types of techniques.
- Methods with dependent variable: multiple linear regression, binary logistic regression.
- Methods with only independent variables: factor analysis, cluster analysis, biplot methods, MANOVA and discriminant analysis.

4. Academic activities

- **Master Class** (25 hours): presentation of the subject´s topics through oral exposition and demonstration on blackboard and computer of theoretical and practical contents.
- **Problem and case solving** (5 hours): students will discover the appropriate or correct solutions to problems and situations through the application of formulas, algorithms or other techniques taught in the subject, as well as the interpretation of the results obtained. The purpose is to exercise, rehearse and put previous knowledge into practice.
- **Study, teaching assignments and assessment** (42.5 hours): practical application or research works.

5. Assessment system

The student must demonstrate achievement of the intended learning results through the following assessment activities:

Written work: students will be asked to complete different assignments in order to demonstrate that they are autonomous when working with a database.

Techniques based on student attendance and active participation in class, seminars and tutorials.

The above assessment activities will be carried out on a continuous basis, during the classes of the second four-month period, when the teachers finish the theoretical and practical development of the syllabus's contents. In this way, the student will be able to carry out a "continuous assessment" of their learning in this subject. The subject is considered as passed when the student obtains a grade equal to or higher than 5 in the continuous assessment.

The student who has not obtained a grade equal to or higher than 5 in this continuous assessment system, or who has not chosen it , will have the opportunity to present the written works on the official examination date. The subject is considered as passed when the student obtains a grade equal to or higher than 5 for the mentioned written works.

6. Sustainable Development Goals

3 - Good Health & Well-Being
4 - Quality Education