Academic Year/course: 2021/22

29306 - Biostatistics

Syllabus Information

Academic Year: 2021/22
Subject: 29306 - Biostatistics
Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte
Degree: 442 - Degree in Odontology
ECTS: 6.0
Year: 1
Semester: Second semester
Subject Type: Basic Education
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving, lab sessions, and autonomous work and study.

4.2. Learning tasks

This course is organized as follows:

- **Lectures**. As a basic instrument for introducing the contents and logical foundations of the subject. In the same, examples of application of the theory are also solved by requesting the intervention of the students, who bring their prior knowledge. Students will have all the material available in Moodle.
- **Problem-solving**. Where the theoretical knowledge is applied to solving specific problems and proceed to the resolution of individual controls. Problem-solving is done individually or in groups working together. One person in the group can be nominated for oral presentation in front of the other students involved in correcting it. The teacher acts clarifying concepts and providing if required, additional keys. This process allows early detection of learning problems in students. Computer sessions in which students will work with statistical software, focusing on their correct use for management and basic statistical analysis of the data, and the correct interpretation of the outputs of the program to the technical different bivariate statistics.
- **Lab sessions**. In computer classroom with the support of SPSS and / or Excel
- **Autonomous work and study**
- **Group work**:
    - In groups of 4, students collect some real data, create a database, and summarize the information collected through tables and graphs, in addition, to proceed to univariate and bivariate statistical analysis of the variables involved using computer software, presenting report written.
    - In groups, students solve a set of problems reporting the results in writing.

- **Exams**. Individual tests objective multiple choice and short question
- **Tutorials**. They can be individual or in groups and on-site or online.

4.3. Syllabus

This course will address the following topics:

Lectures
- 1. Introduction to Biostatistics. Scientific method.
- 2. Univariate descriptive statistics. Frequency distribution: Tables and Charts. Measures of central tendency, dispersion, position and shape.
- 3. Bivariate descriptive statistics. Crosstabulations. Correlation and regression.
- 4. Probability Theory. Random variable and probability distribution models.
- 5. Introduction to inferential statistics. Sampling. Interval estimation. Sample size.
- 6. Inferential statistics Hypothesis Tests: fundamentals, types of errors, significance level, power of contrast and degree of significance (p value).
- 7. Hypothesis testing based on means, variances and proportions. Student's t Test. Test "z". Test "F" Snedecor.
- 8. Nonparametric inferential statistics. "U" Mann-Whitney rank Test. T Wilcoxon Test.
- 9. Chi Square test of independence.

Problem-solving sessions
- 1. Univariate descriptive statistics.
- 2. Correlation and regression.
- 3. Probability theory. Bayes Theorem.
- 4. Probability Distributions.
- 5. Test "z". Student's t-Test.
- 6. Test Chi-Square.

Lab sessions

In computer classroom with the support of SPSS and/or Excel/open software.

Contents:
- 1. Creating a new database. Data management. Frequency tables and graphs. Descriptive statistics.
- 2. Crosstab. Regression and correlation.
- 3. Parametric and nonparametric tests. Chi-Square test.

4.4. Course planning and calendar

The course consists of 6 ECTS credits corresponding to 150 hours of dedication by the student. In this course, the contact hours account for 40%, ie, 60 hours, distributed in the activities as follows:
- 36 hours of lectures
- 14 hours of problem-solving
- 10 hour of computer sessions

Further information concerning the timetable (https://fccsyd.unizar.es/academico/horarios-y-calendarios), classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Health and Sports Sciences website and Moodle.

4.5. Bibliography and recommended resources

To check the recommended bibliography of this course, please visit the link following:

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=29306&;Identificador=12386