

26701 - Biostatistics

Información del Plan Docente

Academic Year	2016/17
Academic center	104 - Facultad de Medicina 229 - Facultad de Ciencias de la Salud y del Deporte
Degree	304 - Degree in Medicine 305 - Degree in Medicine
ECTS	6.0
Course	1
Period	Second semester
Subject Type	Basic Education
Module	---

1. Basic info

1.1. Recommendations to take this course

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

5.2. Learning activities

5.3. Program

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LECTURE CONTENTS:

Module I: Statistical methods for one and two variables. Theoretical basis for biostatistics.

Descriptive statistics.

LESSON 1. UNIDIMENSIONAL STATISTICAL VARIABLES. Frequency distributions. Tables and graphs. Descriptive statistics: Moments, central tendency, spread, position and shape. Data exploratory analysis

LESSON 2. BIDIMENSIONAL STATISTICAL VARIABLES. Two-way tables and graphical representations. Variance and correlation. Other correlation coefficients.

Probability and random variables

LESSON 3. PROBABILITY: CONCEPTS AND THEOREMS. Random experiments: outcomes and events. Operations with events. Relative frequencies and probability. Conditional probability and total probability. Bayes theorem. usefulness in medical diagnosis. Random variables.

LESSON 4. RANDOM VARIABLE. Probability distributions: properties and parameters.

LESSON 5. DISCRETE DISTRIBUTIONS: Binomial, Poisson, etc. CONTINUOUS DISTRIBUTIONS: Normal, chi-squared, Student' t and Snedecor's F. Central limit theorem. Convergence to the normal distribution

Module II. Inferential statistics.

Parametric Inferential Statistics

LESSON 6. ESTIMATION: Point estimation of population distribution parameters. Qualities of a good estimator. Estimation by confidence interval: confidence coefficients. Relationship between confidence intervals and hypothesis testing. Confidence intervals for normal populations. Confidence intervals for proportions. Sample size determination.

LESSON 7. HYPOTHESIS TESTING: Methodology, foundations, error types, significance level, power of the test and p values.

LESSON 8. PARAMETRIC HYPOTHESIS TESTING. Hypothesis testing based on one, two or more sample means from normal populations, Hypothesis testing based on one or two sample variances from normal populations. Hypothesis testing for one or two proportions. Hypothesis testing in linear regression. Sample size determination.

Non-Parametric Inferential Statistics

LESSON 9. NON PARAMETRIC TESTS. Goodness of fit tests. Tests for comparing 2 or more samples from non-normal population distributions.

LESSON 10. TWO WAY TABLES: Chi-square test for homogeneity and independence

5.4.Planning and scheduling**5.5.Bibliography and recomended resources**