29202 - Biostatistics

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

Lectures

Seminars Students perform problem-solving tasks using a calculator both individually and in small groups

Computer lab sessions Students perform problem-solving tasks using a statistical package both individually and in small

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groups

5.3.Program

Lectures/seminars contents

- Introduction to Biostatistics. Scientific method.
- Univariate descriptive biostatistics. Frequency distribution. Tables and graphs. Measures of central tendency, spread, shape and position.
- Bivariate descriptive biostatistics. Two-way tables. Correlation and Regression.
- Probability theory. Bayes Theorem. Random variable and Probability distribution models.
- Introduction to inferential statistics. Sampling. Estimation by confidence interval. Sample size.
- Inferential statistics: Introduction to hypothesis testing, error types, significance level, power of the test, p values. Paired and independent samples.
- Hypothesis testing based on means, variances or proportions: Student' T , Z and Snedecor's F tests
- Non-parametric methods: chi-square test for independence. Mann-Whitney U test for ranked values.

Computer lab sessions contents: Use SPSS/Epidat and/or Excel to:

- Create a new database. Manage data and variables.
- Create univariate and bivariate frequency tables and graphs
- Perform correlation and regression techniques
- Perform two sample comparisons of means and create confidence intervals for the population mean differences
- Compare proportions among two independent populations

5.4.Planning and scheduling

5.5.Bibliography and recomended resources

Recommended

- Almenara Barrios, José.. Manual de Bioestadistica : Teoria y Prácticas / José Almenara Barrios, Cesáreo García Ortega, Carolina Lagares Franco. . Cádiz : Quorum Editores, D.L. 2005.
- Bioestadística amigable / Miguel A. Martínez González (editor) ; Almudena Sánchez-Villegas, Francisco Javier Faulín Fajardo (co-editores) . 2ª ed. Madrid : Díaz de Santos, D.L.2006
- Martín González, Germán. Prácticas de estadística básica con SPSS / Germán Martín González. . Valencia : Universidad Católica San Vicente Mártir, 2008.
- Marston, Louise. Introductory statistics for health and nursing using SPSS / Louise Marston . Los Angeles : SAGE, 2010

Complementary

- Daniel, Wayne W.. Bioestadística : base para el análisis de las ciencias de la salud / Wayne W. Daniel . 4ª ed. en español, 2ª reimp. México : Limusa Wiley, cop. 2002
- Pagano, Marcello. Fundamentos de bioestadística / Marcello Pagano, Kimberlee Gauvreau. 2a ed. México D.F., etc. : Thomson Learning, cop.2001.
- Campbell, Michael J., PhD. Statistics at square one / M.J. Campbell and T.D.V. Swinscow. 11th ed. Chichester, West Sussex ;Hoboken, NJ : John Wiley & Sons, 2009.
- Pérez López, César. Estadística aplicada a través de Excel / César Pérez López . reimp. Madrid [etc.] : Prentice Hall, 2008