

Academic Year/course: 2022/23

25404 - Applied Statistics in Health Sciences

Syllabus Information

Academic Year: 2022/23

Subject: 25404 - Applied Statistics in Health Sciences

Faculty / School: 127 - Facultad de Ciencias de la Salud

275 - Escuela Universitaria de Enfermería de Huesca

375 - Escuela Universitaria de Enfermería de Teruel

Degree: 559 - Degree in Nursing

560 - Degree in Nursing

561 - Degree in Nursing

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

This is a basic course in applied statistics with particular focus on the health sciences. The course will teach basic statistical methods and procedures. In the computer lab sessions a statistical software package will be used to execute these procedures.

The methodology followed in this course is oriented towards the achievement of the learning objectives. It favors the acquisition of knowledge related to biostatistics and health services. A wide range of teaching and learning tasks are implemented, such as lectures, computer lab sessions, assignments, and autonomous work.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

4.2. Learning tasks

This is a 6 ECTS course, that entails 150 hours of student work, organized as follows:

- Lectures (30 hours). Whole group sessions. The professor will explain the theoretical contents, which are available in advance on the virtual platform Moodle.
- Computer lab sessions (30 hours). Sessions where students work with case studies and problem-solving tasks using a statistical package. A summary of each session is available in advance on the virtual platform Moodle.
- Autonomous work (60 hours). Time devoted to study the course contents and prepare sessions and case studies.
- Group work (24 hours). In small groups, time devoted to carry out a statistical analysis. At the end of the course, the

students will submit a written copy of the statistical analysis.

- Evaluation (6 hours). Exams that include case studies and problem-solving tasks.

4.3. Syllabus

The course will address the following topics:

Introduction

- 1.1 The scientific method
- 1.2 Steps in the research process
- 1.3 Population and sample
- 1.4 Types of statistical data

Univariate descriptive statistics

- 2.1 Describing data using tables and graphs
- 2.2 Distribution of a variable: measures of location
- 2.3 Distribution of a variable: dispersion and shape
- 2.4 Incidence and prevalence
- 2.5 Univariate descriptive statistics using a statistical package

Bivariate descriptive statistics

- 3.1 Contingency tables
- 3.2 Marginal and conditional distributions
- 3.3 Introduction to Chi square tests
- 3.4 Scatter plots
- 3.5 Covariance and linear correlation coefficient
- 3.6 Introduction to linear regression
- 3.7 Bivariate descriptive statistics using a statistical package

Probability

- 4.1 Basic concepts in probability
- 4.2 Conditional probability and independence
- 4.3 Law of total probability. Bayes' theorem
- 4.4 Diagnostic tests: sensitivity and specificity

Random variables

- 5.1 Random variables and their characteristics
- 5.2 Discrete random variables. The Bernoulli, binomial and Poisson distributions
- 5.3 Continuous random variables. The uniform, exponential and Normal distributions
- 5.4 Probabilities and quantiles using a statistical package

Statistical inference

- 6.1 Introduction to sampling
- 6.2 Point estimation
- 6.3 Confidence interval
- 6.4 Statistical hypothesis testing
- 6.5 Inference using a statistical package

4.4. Course planning and calendar

Schedule of basic activities during the course:

- Course duration: 15 weeks
- Lectures: 2h per week
- Computer lab sessions: 2h per week
- Midterm exam 1: Mars
- Midterm exam 2: May

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class. Additional information about the academic calendar, final exams schedules, etc. is available at the [Faculty of Health Sciences website](#).

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25404&Identificador=1675>