

## 68402 - Biostatistics. Epidemiology

### Syllabus Information

---

**Academic Year:** 2019/20

**Subject:** 68402 - Biostatistics. Epidemiology

**Faculty / School:** 104 -

**Degree:** 530 - Master's in Introduction to Medical Research

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject Type:** Compulsory

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

### 3.Assessment (1st and 2nd call)

#### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

### 4.Methodology, learning tasks, syllabus and resources

#### 4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as:

- Lectures: The theoretical concepts are complemented with practical cases to comment and interpret the results obtained by means of statistical packages.
- The assimilation of these concepts is reinforced by means of the critical review of articles in which statistical and epidemiological techniques are developed.
- Tutorials can be individual or in small groups, depending on what students need, to solve doubts and unclear concepts of the course contents.
- Individual and group papers, submitted via email.
- Autonomous work and study.

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.

#### 4.2.Learning tasks

The course includes the following learning tasks:

- Theory and practice classes
- Critical review of scientific articles.
- Interpretation of outputs of statistical packages used in the Social Sciences.

### 4.3.Syllabus

The course will address the following topics:

Topic 1. Collecting information. Sampling. Surveys.

Topic 2. Hypothesis testing for two or more samples.

Topic 3. Multiple regression and correlation. Logistic regression.

Topic 4. Crosstabs. Correspondence analysis.

Topic 5. Survival analysis.

Topic 6. Introduction to Epidemiology. The measurement to epidemiology. Design of epidemiological studies.

Topic 7. Analytic Epidemiology. Observational designs. Experimental designs.

Topic 8. Study of cause-effect association: Causal models. Evidence-based medicine. Research protocol.

### 4.4.Course planning and calendar

#### Provisional course planning

| Topics  |                  | Time  |
|---|------------------|-------|
| Topic 1. Collecting information. Sampling. Surveys.   | 30-october-2019  | 16-20 |
| Topic 2. Hypothesis testing for two or more samples   | 31-october-2019  | 16-20 |
| Topic 3. Multiple regression and correlation. Logistic regression.  | 4-november-2019  | 16-20 |
| Topic 4 Crosstabs. Correspondence analysis  | 5-november-2019  | 16-20 |
| Topic 5. Survival analysis.   | 6-november-2019  | 16-20 |
| Topic 6. Introduction to Epidemiology. The measurement to epidemiology. Desing of epidemiological studies | 7-november-2019  | 16-20 |
| Topic 7. Analytic Epidemiology. Observational designs.<br>Experimental designs                            | 11-november-2019 | 16-18 |
| Presentation of activity of evaluation  |                  | 18-20 |
| Topic 8 Analytic Epidemiology: Experimental designs. Observational designs.                               | 12-november-2019 | 16-18 |
| Group work time.  |                  | 18-20 |
| Exam and presentation of papers   | 13-november-2019 | -     |

Further information concerning the timetable, classroom, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Faculty of Medicine <https://medicina.unizar.es/>.

### 4.5.Bibliography and recommended resources

- Álvarez Cáceres, R. Estadística aplicada a Ciencias de la Salud. Ed: Díaz Santos. Madrid. 2007

- Argimón Pallás JM, Jiménez Villa J. Métodos de investigación. Clínica y epidemiológica. 4ªed. Elsevier, 2013.

- Begg C, Cho M, Eastwood S, Horton R, Moher D, Olkin I, Pitkin R. Mejora de la calidad de los informes de los ensayos clínicos aleatorios controlados. Recomendaciones del grupo de trabajo CONSORT. Rev Esp Salud Pública 1998; 72: 5-11

- Berra S, Elorza Ricart JM, estrada MD, Sánchez E. Instrumento para la lectura crítica y la evaluación de estudios epidemiológicos transversales. Gac Sanit 2008;22(5): 492-7

- Hopewell S, Clarke M, Moher D, Wager E, Middleton P, et al. (2008) CONSORT for Reporting Randomized Controlled Trials in Journal and Conference Abstracts: Explanation and Elaboration. PLoS Med 5(1): e20. doi:10.1371/journal.pmed.0050020 available in: [http://medicine.plosjournals.org/archive/15491676/5/1/pdf/10.1371\\_journal.pmed.0050020-S.pdf](http://medicine.plosjournals.org/archive/15491676/5/1/pdf/10.1371_journal.pmed.0050020-S.pdf)

- Kleinbaum DG.; Kupper LL.; Muller KE.; Applied Regresión Análisis and Other Multivariable Methods (2ª ed). Ed Duxbury Press. California. 1988

- Martínez González, MA.; Sánchez-Villegas, A; Faulín Fajardo, J. Bioestadística amigable (2ª ed). Ed: Díaz Santos. Madrid 2007

- Milton JS. Estadística para Biología y Ciencias de la Salud. 3ª ed ampliada McGraw Hill 2007.

- Rubio, E. y col Manual de Bioestadística. Ed: Emilio Rubio Calvo. Cátedra de Bioestadística. Universidad de Zaragoza. 2015

- SILVA LC. Excursión a la regresión logística en Ciencias de la Salud. Ediciones Díaz de Santos SA. Madrid 1995.

- SANTABARBARA J, RUBIO E, CEJA C, MARTÍNEZ T. MANUAL DE BIOESTADÍSTICA APLICADA CON IBM SPSS. ED: ANDAVIRA. SANTIAGO DE COMPOSTELA 2015.

- SANTABARBARA J, RUBIO E, MARTÍNEZ T. INTRODUCCIÓN AL ANÁLISIS DE SUPERVIVENCIA. ED: PRENSAS UNIVERSITARIAS. 2015.

- von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, en nombre de la iniciativa STROBE. Declaración de la Iniciativa STROBE (Strengthening the Reporting of Observational studies in Epidemiology): directrices para la comunicación de estudios observacionales. Gac Sanit. 2008;22(2):144-50