

## Epidemiology

Code: 102949

ECTS Credits: 3

**2025/2026**

Degree	Type	Year
Medicine	OB	3

## Contact

Name: Xavier Bonfill Cosp

Email: xavier.bonfill@uab.cat

## Teachers

Maria Montserrat Martin Baranera

Maria Teresa Puig Reixach

Maria Jose Martinez Zapata

Laura Martinez Garcia

Ivan Sola Arnau

María Jesús Quintana Ruiz

Ignasi Bolíbar Ribas

Gerard Urrutia Cuchi

## Teaching groups languages

You can view this information at the [end](#) of this document.

## Prerequisites

Know the principles, methods and applications of biostatistics, and the basic notions of the mechanisms of disease production.

## Objectives and Contextualisation

The subject is a program for the third year of the Medical Degree and is intended for the different hospital teaching units.

The subjects of Epidemiology, Preventive Medicine and Public Health are taught to the Teaching Units respectively in the third and fifth years. Ambdues assignments constitute the dues complementary parts of a subject matter, Public Health. If the first emphasizes the methodological and analytical aspects, the second delves into the determinants of health and preventive and sanitary interventions.

Epidemiology is the science that studies the distribution and determinants of diseases in the population there and evaluates the effect of clinical and health interventions. The goal of the program is to understand the

foundations of epidemiological reasoning, to know how to apply epidemiological methodology to the problems of public health, clinical and community medicine, and research, thereby understanding health and malaria as the result of biological, social and cultural processes.

The main objectives are: to observe, define, and quantify community health problems; to understand the causes of diseases; to explain local patterns of disease; to describe the natural history of disease; to design and evaluate action measures to reduce the burden of health problems; and to assess the evidence (etiological, preventive, and therapeutic) for health problems.

The objectives of this course focus on the acquisition of competencies and skills related to epidemiological measures and designs, and on learning scientific and epidemiological reasoning (through critical reading exercises of scientific articles, and the formulation and resolution of clinical, research, and public health problems).

## Competences

- Accept one's role in actions to prevent or protect against diseases, injuries or accidents and to maintain and promote health, on both personal and community-wide levels.
- Be able to work in an international context.
- Communicate clearly, orally and in writing, with other professionals and the media.
- Demonstrate basic knowledge of the Spanish health system, legislation on health and economic issues.
- Demonstrate knowledge of the national and international health organisations and the factors and circumstances affecting other healthcare systems.
- Demonstrate understanding of the factors that determine equality in access to health, their safety and quality.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Recognize the determinants of population health, both genetic and dependent on gender, lifestyle, and demographic, environmental, social, economic, psychological and cultural factors.
- Use information and communication technologies in professional practice.

## Learning Outcomes

1. Address health problems through collective interventions for the promotion, protection and prevention, and restoration of health and assess their impact.
2. Analyse the national and international systems of epidemiological surveillance.
3. Apply methodologies to identify determinants of gender and other factors associated with health inequalities in the design and interpretation of epidemiological studies and health programmes.
4. Assess the health needs of the population.
5. Be able to work in an international context.
6. Communicate clearly, orally and in writing, with other professionals and the media.
7. Describe health planning and administration at Spanish, European and regional level.
8. Describe the processes of health/illness and their determining factors from the population perspective.
9. Describe the role of vaccines in community health.
10. Differentiate between the factors associated with inequalities and, in particular, with gender issues in public health research and practice.
11. Differentiate between the levels of healthcare.

12. Enumerate the main world health problems and their preventive measures.
13. Evaluate the healthcare quality system and patient-safety strategies.
14. Explain the economic and social implications of medical intervention, using criteria of effectiveness and efficiency.
15. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
16. Identify principles of environmental health, workplace health and food health.
17. Identify the international health organisations at Spanish, European and regional level.
18. Identify the main activities of health promotion and disease prevention.
19. Interpret health indicators.
20. Interpret the processes of planning, scheduling and assessment in health programmes.
21. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
22. Use information and communication technologies in professional practice.
23. Value the principles and apply the methods of preventive medicine and public health.

## **Content**

CLASS (TE)

TOPIC

C1 Introduction to epidemiology. Epidemiological surveillance. Clinical epidemiology

C2 Frequency measurements.

C3 Measures of effect.

C4 Impact measures.

C5 Measurement of survival.

C6 Epidemiological designs. The causality.

C7 Descriptive designs and observational designs.

C8 Intervention studies. Ethical principles of medical research.

C9 Gradation of the evidence. Reviews of the evidence and meta-analysis.

C10 Epidemiology of communicable diseases.

C11 Epidemiology of chronic diseases.

C12 Diagnostic tests.

SEMINAR (1 h) (PA)

TOPIC

S1 Big milestones in epidemiology: Snow, Bradford-Hill, Framingham study, Doll e Hill study, health surveys.

S2 Frequency measurements.

S3 Measures of effect.

S4 Impact measures. Dose-response relationships. Stratification.

S5 Approach of descriptive and observational studies (a descriptive study, a case-control study).

S6 Approach to intervention studies (a clinical trial to evaluate the efficacy of a medicine, a community trial to evaluate the efficacy of a vaccine).

S7 Validity. Random errors. Bias Analysis of data from a study.

S8 Critical reading of a scientific article.

SCC (1 h)

TOPIC

E1 Diagnostic tests. Case

E2 Estimation of the effect of a factor (descriptive and observational studies). Case

E3 Estimating the effectiveness of an intervention (intervention studies). Case

E4 Systematic reviews and meta-analyses. Casse

## Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
CLASSROOM PRACTICES (PAUL)	8	0.32	13, 15, 18, 19, 5, 22
SPECIALIZED SEMINARS (SCC)	4	0.16	2, 13, 15, 17, 16, 18, 19, 5, 22
THEORY (TE)	12	0.48	2, 13, 10, 15, 17, 16, 18, 19
Type: Autonomous			
PERSONAL STUDY	38	1.52	2, 13, 10, 15, 17, 16, 18, 19, 22
READING OF ARTICLES / INTEREST REPORT	9	0.36	13, 10, 23

This guide describes the framework, contents, methodology and general rules of the subject, in accordance with the current curriculum. The final organization of the subject, with respect to the number and size of groups, distribution in the calendar and dates of exams, specific criteria for evaluation and review of exams, will be specified in each of the hospital teaching units, which will make it explicit through of the web pages and the first day of class of each subject, through the teacher responsible for the subject in the UDH.

For the present course, the professors appointed by the departments as responsible for the subject at the Faculty and the UDH level are:

Responsible department:

Maria-Guadalupe Esteve Pardo

Responsible UDH:

UD Vall d'Hebron: Magdal Campins

UD Germans Trias i Pujol: Irma Casas

UD Sant Pau: Xavier Bonfill

UD Parc Taulí: Gemma Navarro

In the current exceptional circumstances, at the discretion of the teachers and also depending on the resources available and the public health situation, some of the theoretical classes, practicals and seminars organized by the Teaching Units may be taught either in person or virtually.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Assessment

### Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and participation in classes and seminars	10%	1	0.04	2, 13, 10, 15, 17, 16, 18, 19, 5, 22, 23
Practice: Assessments written through objective tests.	45%	1	0.04	1, 2, 16, 18, 19, 20, 23
Theory : Assessments written through objective tests.	45%	2	0.08	2, 3, 6, 9, 8, 7, 10, 11, 12, 14, 15, 17, 16, 18, 19, 21, 23, 4

It consists of two objective tests:

Assessment of practical knowledge, through the resolution of exercises and problems. It consists of 25-30 multiple-choice questions with 5 possible answers and one correct answer. Each correct answer is worth 1 point, and incorrect answers subtract 0.25 points. It represents 40-45% of the total grade. Each midterm exam is scored separately. Students who fail must take the summary exam.

Assessment of theoretical knowledge. It consists of 35-50 multiple-choice questions with 5 possible answers and one correct answer. Each correct answer is worth 1 point, and incorrect answers subtract 0.25 points. It represents 40-45% of the total grade. Each midterm exam is scored separately. Students who obtain less than a 4 on either exam must take the summary exam.

There will be continuous assessment of practical knowledge and student participation in seminars and practical sessions. This assessment may be written or oral, based on questions or presentations made during the seminars, or at the end of them. The use of artificial intelligence (AI) is permitted as long as it is applied critically and not literally. This assessment will be graded between 0 and 10. This grade is worth 10-15% of the final Epidemiology grade.

Final Grade: Weighted sum of the results obtained in the practical exam (45%), the theoretical knowledge exam (45%), and the continuous assessment of seminars and practicals (10%).

Numerical grade with one decimal place, from 0 to 10. Qualitative grading: fail, pass, excellent, excellent, MH.

Exam Review System. Exams will be reviewed individually with the student, upon written request within the established deadlines.

**Retake Exam:** Students who have obtained a final grade of "failed," those who have failed a partial exam, or those wishing to improve their grade may take the exam; in the latter case, the mark from the make-up exam will prevail. The exam methodology may be different from that used in the previous assessments.

#### **UNIQUE EVALUATION:**

There will be a single test to assess the practical and theoretical knowledge (solving exercises and problems). It will be a written exam.

Students who fail must take the retake exam.

The exam review system and the make-up exam will be the same as the original exam.

## **Bibliography**

Argimon JM, Jiménez J. *Métodos de investigación clínica y epidemiológica*. 4<sup>a</sup> ed. Barcelona: Elsevier, 2012

Fletcher RH, Fletcher SW, Fletcher GS. *Epidemiología clínica*. Lippincott Williams and Wilkins. Wolters Kluwer Health, 2016. ISBN 9788416353910

Gordis L. *Epidemiología*, 5<sup>a</sup> ed. Madrid: Harcourt, 2014.

Hernández-Aguado I., Lumbreras Lacarra B. *Manual de Epidemiología y Salud Pública para Grados en Ciencias de la Salud*. 3<sup>a</sup> ed. Madrid: Editorial Médica Panamericana, 2018.

Porta M (ed.). *A Dictionary of Epidemiology*. Sixth ed. New York: Oxford University Press, 2014.

## **BIBLIOGRAFIA DE CONSULTA**

Straus SE, Richardson WS, Glasziou P, Haynes BR. *Medicina basada en la evidencia. Cómo practicar y enseñar la MBE*. 3<sup>a</sup> ed. Madrid: Elsevier, 2006.

Greenberg RS, Daniels SR, Flanders WD, Eley JW, Boring JR. *Medical Epidemiology*. 4<sup>a</sup> ed. New York: Lange Medical Books/McGraw-Hill, 2005.

Rothman KJ. *Epidemiology: An introduction*. 2nd ed. New York: Oxford University Press, 2012.

Rothman KJ, Greenland S, Lash TL. *Modern Epidemiology*. 3<sup>a</sup> ed. Philadelphia: Lipincott, 2008.

## **RECURSOS D'INTERNET**

- [www.OpenEpi.com](http://www.OpenEpi.com)
- [www.cdc.gov/epiinfo/](http://www.cdc.gov/epiinfo/)

## **Software**

Is not necessary

## **Groups and Languages**

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.