UAB
Universitat Autònoma de Barcelona

Epidemiology, Public Health and Bioethics

Code: 101901
ECTS Credits: 6

2024/2025

Degree	Type	Year
2501230 Biomedical Sciences	OB	3

Contact

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Teachers

Irma Casas Garcia

Teaching groups languages

You can view this information at the end of this document.

Prerequisites

There are no prerequisites for taking this module. In spite of this, in order to ensure the proper monitoring of the subject by the student and the achievement of the learning outcomes proposed, it is recommended that the student have basic knowledge about techniques used in Biomedicine and the research associated with many of them will appear throughout the development of their content and will be given by acquaintances. In particular, know the principles, methods and applications of biostatistics, as well as the anatomo-physiological bases of the human body and the general principles of disease production

On the other hand, in a scientific discipline like the Biomedical Sciences it is frequent to use sources of information, norms and international guidelines, in English. It is therefore recommended that students have some basic knowledge of this language.

Objectives and Contextualisation

The subject consists of two well-defined modules: a) epidemiology and public health (4 credits) and b) bioethics (2 credits). The first module is given to the UUDD of Can Ruti, Sant Pau, Vall d'Hebrón and Hospital Parc Taulí,, concentrating the activity conducted in a single UUDD in a rotating manner every year. The second one is given to Bellaterra campus.

The Epidemiology and Public Health module aims to deepen the knowledge of methodological and analysis aspects, as well as to know the determinants of health and preventive interventions.

Epidemiology is the science that studies the distribution and the determinants of diseases in the population. The purpose of the program is to understand the fundamentals of the epidemiological reasoning, to know how

to apply the epidemiological methodology to the problems of public health, clinical and community medicine, and to research, as well as understand health and disease as a result of biological processes, social and cultural paying a special attentio to gender perspective. Its main objectives are to observe, define and quantify the health problems of the community, to know the causes of illnesses, to explain the local patterns of the disease, to describe the natural history of the disease, to design and evaluate action measures for reduce the burden of health problems, and evaluate the (etiological, preventive and therapeutic) evidence of health problems. The objectives of this part of the course focus on the acquisition of skills and abilities on epidemiological measures and designs, and on the learning of scientific and epidemiological reasoning (through exercises for critical reading of scientific articles, and the approach and the resolution of clinical, research and public health problems).

The Public Health part of the subject reviews the most current aspects related to the prevention of illness in modern society. In particular, the maintenance andpromotion of the health of individuals requiresboth the functioning of public health and healthcare programs, and the daily work of healthcare professionals in the development of preventive and health promotion activities. The remarkable longevity of the population, the high prevalence of chronic diseases, and the persistence of transmissible diseases, require continued activity in preventive actions, immunizations, screening, health education and preventative advice.

During the course, the application of the epidemiological method in applied research in the field of Public Health will be reviewed and upon finishing the student should know the fields of application of epidemiological research, as well as having acquired the basic skills for Do a review of a scientific publication and integrate into a multidisciplinary team to support biomedical research projects.

The two distributive blocks incorporate:

Distributive blocks. Epidemiology.

Health demography

Epidemiological method.

Main epidemiological designs.

Introduction to the analysis of data in epidemiology.

Evidence-based medicine

Applied Epidemiology

Distributive blocks. Public Health

Introduction to Preventive Medicine and Public Health.

Health protection: Environmental Health and Food Safety.

Health problems and specific preventive actions in communicable diseases.

Health problems and specific preventive actions in chronic diseases.

Promotion of health.

Sanitary system Health management and evaluation.

International health

The Bioethics module is complementary to the degree and with it, it is intended that the student acquires knowledge about the ethical and legal aspects related to the Biomedical Sciences and the associated research.

The training objectives are that the student, at the end of the subject,is able to:

1. Apply the knowledge acquired in the planning and implementation of research, development and innovation projects in a biomedical research laboratory, a laboratory of a clinical department and the biomedical industry.
2. Apply the inspirational basic principles of Bioethics in the design of experiments related to Biomedicine.
3. Apply existing legislation in Biomedical research according to bioethical principles paying a special attention to gender perspective.
4. Demonstrate that it has an integrated vision of an R & D & I process, from the discovery of basic knowledge, application development and market introduction, and to apply the main concepts of organization and management in a biotechnological process.
5. Read and criticize original scientific articles and review in the field of biomedicine, and be able to evaluate and choose the appropriate methodological descriptions for the work of a biomedical laboratory.
6. Understand and criticize scientific articles related to biomedicine and society
7. Work as part of a group together with other professionals, understand their views and cooperate constructively.
8. Communicate and apply knowledge in public and cultural debate.
9. Identify and understand the continuous advances and challenges in research
10. Develop self-learning and motivation skills to continue their training at the postgraduate level
11. Acting respecting the ethical and legal aspects of research and professional activities
12. Develop scientific knowledge, critical thinking and creativity
13. Develop a critical thinking and reasoning and know how to communicate effectively, both in their own languages and in a third language.
14. Develop autonomous learning strategies.
15. Respect the diversity and plurality of ideas, people and situations.
16. Generate innovative and competitive proposalsin research and in professional activity

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Apply knowledge acquired to the planning and implementation of research, development and innovation projects in a biomedical research laboratory, a clinical department laboratory or the biomedical industry.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Apply legislation in force and the principles of bioethics to biomedical research.
3. Apply the basic principles of bioethics to the design of experiments in biomedicine.
4. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
5. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
6. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
7. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
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10. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
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12. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

Module of Epidemiology and Public Health*:

ACTIVITIES CARRIED OUT. CLASSES (1h)

EPIDEMIOLOGY

1. Introduction to Epidemiology and Public Health.
2. Frequency and effect measurements.

3. The study of the health of the populations. Demographic and health indicators.

4. Descriptive and observational epidemiological designs

5. Epidemiological intervention designs.

6. Molecular epidemiology.

7. Evidence Based Medicine

8. Assessment of diagnostic tests.

9. Validity. Errors and bias.

PUBLIC HEALTH

10. Bases of Preventive Medicine. Determinants of health. The promotion of health. Primary prevention.

11. Secondary prevention: screening

12. Environmental factors and health

13. Food safety. Nutrition and health

14. Prevention and control of transmissible diseases

15. Immunoprevenable diseases. Preventive vaccines

16. Chronic illnesses. Aging and health

17. Epidemiology and cancer prevention

18. Epidemiology and prevention of cardiovascular diseases

19. Global health. Sexual and reproductive health

20. Health system. Health Management and Evaluation

ACTIVITIES CARRIED OUT. SEMINARS (1h)

1. Information systems in Public Health

2. The research protocol.

3. The analysis of data

4. Stratification and standardization

5. The measure of survival

6. Critical reading of a scientific article: controlled clinical trial

7. Systematic reviews and meta-analysis

8. Grading of the evidence. Elaboration and quality of clinical practice guides.

ACTIVITIES CARRIED OUT. DIRECTED EXERCISES (1h + self-employed)

1. Design and evaluation of an observational study

2. Design and evaluation ofan intervention study

3. Assessment of diagnostic tests

4. Measure of survival

5. Study of an outbreak of food poisoning

Bioethics module*

PART I. PRINCIPLES OF BIOETHICS

Definition of Bioethics

Fundamental ethical theories in Bioethics

Analysis in bioethics

Basic principles in Bioethics

Other relevant principles in Bioethics

PART II. THE ETHICS IN RESEARCH

Ethical principles in scientific practice

Obligations of the researchers

Codes of Good Practices in Research

Ethical principles of research in Biomedicine

PART III. THE ETHICAL DESIGN OF EXPERIMENTATION WITH ANIMALS

Ethical aspects of animal research

The basic principles: the 3R

Legal aspects of the use of experimental animals: RD 53/2013

PART IV. THE ETHICAL DESIGN OF EXPERIMENTATION WITH HUMAN BEARS

Ethical principles

The subjects

Legal aspects of research in human beings, embryos and reproductive cells: Law 14/2007 and 14/2006

PART V: ETHICAL ASPECTS OF THE NEW TECHNOLOGIES

General concerns

Regenerative medicine

Personalized medicine

Reproductive medicine

Genetic modification

Genetic counseling

Genetic tests that are incapable of consenting

Use of genetic information

Patents

PART VI: OTHER LEGAL ASPECTS

Law 15/1999

Law 9/2003

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practical seminars	12	0.48	12
Seminars	10	0.4	3, 12
Theoretical sessions	32	1.28	3

Type: Autonomous		
Case study	12	0.48
Individual study and text reading	66.5	2.66

The subject is based on teaching activities in collaboration with the teaching staff and with the student's own work, both individually and in groups.

Module of Epidemiology and Public Health:

The directed activities consist of the theoretical classes where the teacher will review a previously scheduled topic and the seminars where analyzed subjects of more important analytical content and will require the active participation of the student to solve questions and exercises during the class. For directed activity, information will be given during the class or previously the same.

The supervised activities will be supervised by the teacher, but the students will be led by them. They will be made of two types, the practical seminars where practical cases will be solved and exercises that previously will be distributed and the comments to scientific articles, also previously distributed. In both cases students' work groups may be made to handle specific parts of the work.

BIOETHICS MODULE

The Bioethics module consists of theoretical classes and analysis and commentary of cases proposed in a format of Seminars.

The following describes the organization and teaching methodology that will be followed in these two types of training activities.

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Theory classes:

The content of the theory program will be taught mainly by the teacher in the form of master classes with audiovisual support. Alternatively, the methodology of the flipped lessons will also be used, in which the topics are previously prepared by the studentfrom material provided by the teacher and later worked with practical cases in the face-to-face sessions. Presentations used in class by the teacher will be previously available on the Virtual Campus of the subject. It is recommended that students access this material and take it to class, to use it as a support.

Although it is not essential to extend the content of the classes taught by the teacher, unless expressly requested by the latter, it is advised that students regularly consult the books and recommended normative texts in the Bibliography section d 'this teaching guide in order to consolidate and clarify, if necessary, the contents explained in class.

On the other hand, the student will have to work individually the content of the legal texts referred to in this guide. The student will be provided with documents where the full text will appear, as well as a clearing of the normative text in order to facilitate this task.

In addition to the attendance to the classes, the follow-up of the subject will also imply an active role of the student, who will have to analyze and comment on a series of cases and real assumptions related to the contents of the theory program. It is intended that these cases serve to consolidate the contents previously worked in the theory classes and also for the student to develop a critical spirit in the face of ethical and legal problems related to research in Biomedicine. As this comment of the cases will be done in the case of small work groups, it is intended to promote the habit of teamwork and critical argumentation among peers in the student.

Seminars:

The students will do the analysis and comment outside the class schedule of 2 cases proposed, in groups of work between 4 and 6 people that the students themselves must train at the beginning of the course. This discussion will be reflected in individual work that students will deliver (two unique deliveries per group) within the established deadlines, work that will be evaluated by the teacher, sharing all the members of the group the same note (group evaluation).

Subsequently, there will be 2 sessions of seminars, which will be devoted to the analysis and comment on the cases and assumptions between the different groups. Each of these sessions will be attended by half of the set of groups, with all the members of the discussion group present, which will involve about 30 students in 5-6 groups. After reading the case by the teacher, the discussion between moderate and teacher-oriented students will begin. The interventions of the different students will also be evaluated by the teacher in order to highlight the brightest and the most passive students.

The subject proposal will be done by the teacher at the beginning of the course and will be assigned to each subset of discussion groups. The proposal will include the guidelines and points to deal with.

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

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Specific exercises associated to seminars	30%	15	0.6	1, 2, 3, 4, 5, 6, 7, 10, 11, 12
Theoretical and practical assessment	70%	2.5	0.1	1, 2, 3, 6, 7, 8, 9, 11

Module of Epidemiology and Public Health:

1. Assessment type: A review exam will be carried out on theoretical and practical knowledge.

2. Examination system examinations. The review of the exams will be done individually with the student, upon written request within the established deadlines.

3. Attendance and participation in classes and seminars may be evaluated with a maximum score of 10%.

4. Synthesis Exam: students who have obtained the final qualification of suspended, as well as those who wish to improve the grade can present themselves; In this last case the note of the recovery exam will be the one that will prevail. The methodology of the exam may be different from that used in the previous evaluation

5. Non-evaluable: Students that do not attend the evaluation of theoretical knowledge, neither the practical examination nor the recovery will be considered as "Not evaluable".

The weight of the evaluation of this module in the overall subject will be 2/3, corresponding to the proportion in credits of the total content of the subject.

Bioethics module:

The evaluation of the module, which will be a continuous evaluation throughout the semester, will consist of the following evaluation activities:

1. Proof of the contents of the theory (individual assessment): During the semester a partial written test will be carried out on the theoretical contents of the subject, which students will have to answer individually. There will be a model of this test in the Virtual Campus of the subject. This test will consist of a series of objective and semiobjective questions about the corresponding topics of the theory program. The objective questions will usually be questions with multiple option response. Semiobjective questions will be short answer questions, but in which it will be necessary for thestudent to construct their response and reason.

2. Evaluation of the comments to the proposed cases (group evaluation): The two papers presented by each group will be evaluated. The fulfillment of the delivery deadlines will be considered, so that the work presented later to the discussion of the cases in the seminars will not be valid.

3. Evaluation of the public discussion of cases. Seminars (individual assessment): The most brilliant interventions that take place during the public discussion of the cases, as well as the passive attitudes of the students during this activity will be assessed individually.

The relative weight of each of these evaluation activities within this module will be:

Proof of theory contents:

Target test: 40%

Semi-objective test: 40%

Assessment of case comments: 20% (10% of each seminar)

Evaluation of the public discussion of cases. Seminars (individual assessment): + 5%

It is mandatory to get a mark higher than 3,5 in each of the proofs of theory contents to consider this mark to calculate the final average mark of the module.

The objective of these tests is to evaluate not only that students have acquired the conceptual knowledge of the module but, more importantly, that they have bought them and they know how to integrate and relate to each other. On the other hand, it will also be assessed that students use the appropriate terminology when dealing with questions raised during the assessment, as well as the ability to work in groups and to discuss and discuss critically and rationally the topics covered.

4. Not evaluable

"Students not present" or "objective" tests, either the semi-objective or the recovery test will be considered as "Not evaluable".

5. Recovery test

There will be a recovery test for those students who have not matched or passed a 3,5 or have not submitted to each partial tests of theory.

The student will have the option of renouncing the theory test content note and submitting to the recovery exam.

6. Review of exams

The review of exams will be done by appointment and within the schedule proposed by the teacher.

The weight of the evaluation of this module in the global subject will be 1/3, corresponding to the proportion of credits of the total content of the subject.

Global rating

The weight in the overall grade of the module of Epidemiology and Public Health will be 2/3.

The weight in the overall note of the subject of the Bioethics module will be 1/3.

In order to pass the subject the students will have to complete all the tests of each one of the modules and to surpass a global score of 5 out of 10. Students who do not attain the minimum qualification of 4 points in either of the two modules, subject and will receive a maximum final grade of the subject of 4 points.

Non-evaluable: The student will receive the non-evaluable overall grade when it has been considered Non-evaluable in each of the two modules of the subject.

Single assessment

Single assessment is not possible in this course

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Consultation bibliography

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Internet resources

- Departament de Salut, Generalitat de Catalunya: http://www.gencat.cat/salut/
- Pla de salut: http://www.gencat.cat/salut/depsalut/html/ca/plasalut/index.html
- Salut maternoinfantil: http://www.gencat.cat/salut/depsalut/html/ca/infantil/index.html
- Vacunes: http://www.gencat.cat/salut/depsalut/html/ca/vacunes/index.html

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Boletín Oficial del Estado: http://www.boe.es/

Berman Institute of Bioethics: http://www.bioethicsinstitute.org/

Clinical Trials: http://www.clinicaltrials.gov/

Comissió d'Ètica en Experimentació Animal i Humana de la UAB: http://www.recerca.uab.es/ceeah/

Comité de Bioética de España: http://www.comitedebioetica.es/

Council of Europe. Steering Committee on Bioethics:
http://www.coe.int/t/dg3/healthbioethic/cdbi/default_en.asp

EuroBioBank: http://www.eurobiobank.org/

Fundació Grífols: http://www.fundaciogrifols.org/es/web/fundacio/home

Institut Borja de Bioètica: http://www.ibbioetica.org/es/#&panel1-1

Observatori de Bioètica i Dret: http://www.pcb.ub.es/bioeticaidret/

Stanford Encyclopedia of Philosophy: http://www.science.uva.nl/%7Eseop/

The European Group on Ethics in Science and New Technologies: https://ec.europa.eu/research/ege/index.cfm

The Hasting Center: http://www.thehastingscenter.org/

The Hinxston Group: http://www.hinxtongroup.org/

The Nuffield Council: http://www.nuffieldbioethics.org/

UNESCO. International Bioethics Committee: http://www.unesco.org/new/en/socialand-human-sciences/themes/bioethics/international-bioethics-committee/

Software

Not applies

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	501	Catalan	annual	morning-mixed
(PAUL) Classroom practices	502	Catalan	annual	morning-mixed
(SCC) Clinical case seminars	501	Catalan	annual	morning-mixed
(SCC) Clinical case seminars	502	Catalan	annual	morning-mixed
(SEM) Seminars	531	Catalan	annual	morning-mixed
(SEM) Seminars	532	Catalan	annual	morning-mixed
(TE) Theory	53	Catalan	annual	morning-mixed