

Degree	Type	Year
Microbiology	OB	3

Contact

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Teachers

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Teaching groups languages

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

Prerequisites

Although there is no official prerequisite, students are advised to review the concepts that refer to the microbial world, studied previously.

Objectives and Contextualisation

In this subject, students are expected to:

- Identify the concepts on which the epidemiological studies of infectious diseases in humans are based.
- Discuss and compare the microbiological techniques applicable to epidemiological studies.
- Recognize what is the situation of the most infectious diseases that concern the global level.
- Name and select the measures available to prevent the transmission of infectious diseases.
- Relate and practice the epidemiological surveillance systems.
- Infer and correctly interpret the information regarding the epidemiology of infectious diseases in humans from specialized sources.

Learning Outcomes

1. CM13 (Competence) Plan diagnostic and control strategies for infectious diseases from a global perspective and integrating clinical and epidemiological data to provide innovative responses to the challenges, needs and demands of society.
2. CM14 (Competence) Integrate knowledge and skills in the field of microbiology applied to health, working individually and in groups, to prepare and present in writing or orally and publicly a scientific work either in English or in one's own language or others.
3. KM20 (Knowledge) Describe the most important groups of infectious agents, their biological cycles, the molecular mechanisms of pathogenesis and toxicity and the epidemiology of the diseases they cause.
4. KM21 (Knowledge) Indicate the main measures for the prevention and control of pathogenic microorganisms.
5. SM19 (Skill) Use bibliography or internet tools, both in English and in one's own language or others, for the study of pathogenic microorganisms and their control.
6. SM20 (Skill) Apply appropriate methods for the identification, diagnosis and control of microbial agents and their genetic or metabolic components in clinical samples or food.

Content

CONTENTS OF THEORETICAL CLASSES

Topic 1. Introduction to the epidemiology of infectious diseases. Objectives of epidemiology. Basic concepts in epidemiology of infectious diseases. Basic concepts in microbial epidemiology. Clinical investigation of outbreaks and epidemics. Epidemiological surveillance systems. Frequency and association measures.

Topic 2. Molecular epidemiology.

Concept of clonality. Phenotypic epidemiological markers. Genotypic epidemiological markers. Criteria for the evaluation of molecular markers.

Topic 3. Global epidemiological situation of infectious diseases.

Important infectious diseases globally, current situation and new challenges. Diseases of compulsory declaration. Emerging diseases.

Topic 4. Bioterrorism.

Introduction. Characteristics of the biological agents used as weapons. Classification. Agents of category A: *Bacillus anthracis*, *Yersinia pestis*, smallpox virus, *Francisella tularensis*, hemorrhagic fever virus and botulinum toxin. Agents of categories B and C. Paper of the microbiology laboratory. Preventive measures.

Topic 5. Immunization.

Immunological basis of vaccination. Vaccines and adjuvants. Preventable diseases for vaccination. Current and future vaccines.

CONTENT OF THE SEMINARS

Attendance at all seminars is mandatory. In the seminars, students will prepare an epidemiological report and will make an oral presentation.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	8	0.32	CM13, CM14, KM20, KM21, SM19, CM13
Theoretical classes	15	0.6	CM13, KM20, KM21, SM19, SM20, CM13
Type: Supervised			
Individual tutorials	3	0.12	CM13, CM14, CM13
Type: Autonomous			
Preparation of seminars	19	0.76	CM13, CM14, KM20, KM21, SM19, SM20, CM13
self-learning	8	0.32	CM13, CM14, SM19, SM20, CM13
Study	20	0.8	CM13, CM14, KM20, KM21, SM19, SM20, CM13

Theoretical classes. The student must acquire the scientific-technical knowledge of this subject attending these classes and complementing them with the personal study of the topics explained. The teaching of each subject will be based on a theoretical exposition and in a brief discussion of the same.

Seminars. Attendance at all seminars is mandatory. In the seminars, students will work in collaborative or cooperative groups to prepare information on current issues in infectious diseases and making an oral presentation.

Tutorials. Students can take individual tutorials with the teacher of the subject, whenever they need it, requesting a prior appointment.

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
Attendance at seminars and active participation	5%	0	0	CM13, KM20, KM21, SM20
Realization and presentation of an epidemiological report	35%	0	0	CM13, CM14, KM20, KM21, SM19, SM20
Theoretical classes	50%	2	0.08	CM13, CM14, KM20, KM21, SM19, SM20
Theoretical classes, problems	10%	0	0	CM13, KM20, KM21

Theoretical Classes

The evaluation of the theoretical content of the subject, corresponding to the knowledge acquired in the theoretical classes, will be carried out through two written tests: one written test will account for 50% of the grade corresponding to the theoretical content of the subject, and another written test will account for 10% of the overall grade of the subject, related to problems in epidemiology. To pass this part of the subject, the average score of the two written tests must be equal to or greater than 5 points.

Seminars

Preparation and presentation of a report on a specific infectious disease. Students will prepare a report on a specific infectious disease (15% of the overall grade). They will give a public presentation of the report (20% of the overall grade).

For this subject, the use of Artificial Intelligence (AI) technologies is allowed exclusively for support tasks, such as bibliographic or information searches, text correction, or translations. The student must clearly identify which parts were generated using this technology, specify the tools used, and include a critical reflection on how these influenced the process and final outcome of the activity. Lack of transparency in the use of AI in this evaluable activity will be considered academic dishonesty and may result in partial or total penalties in the activity grade, or more severe sanctions in serious cases.

Attendance and Active Participation in Seminars

Attendance and active participation in seminars will account for 5% of the overall grade. Students must answer a series of questions about the report prepared for each seminar.

To pass the seminar part, a score equal to or greater than 5 points must be obtained.

To pass the subject, a minimum score of 5 points must be obtained in the evaluation of theoretical content and a minimum score of 5 points in the seminar part.

Students who do not achieve the minimum score in the theoretical part may take a recovery exam that will cover all theoretical content (both theory and problems), consisting of a written exam with a maximum score of 5 points.

Students who do not achieve the minimum score of 5 points in the seminar part may take a recovery consisting of the preparation and oral presentation of an epidemiological report plus a written exam on all seminars conducted by their classmates. This recovery will have a maximum score of 5 points.

To participate in the recovery, students must have previously been assessed in a set of activities whose weight is equivalent to at least two-thirds of the total grade for the subject or module. Therefore, students will receive a "Not Assessable" grade when the evaluation activities carried out account for less than 67% of the final grade.

Single Evaluation

Students opting for single evaluation must submit the group work and present the seminar during in-person sessions, and it is a requirement to pass them. Attendance is mandatory. The evaluation and weight on the final grade will be the same as in continuous assessment.

The single evaluation consists of a single test covering the entire theoretical program and questions about the seminars attended. The score obtained in this test will be 60% of the final grade for the subject. The single evaluation test will be held on the same date scheduled in the calendar for the last continuous assessment test, and the same recovery system will apply.

Bibliography

Online books

- Epidemiología Clínica. Investigación Clínica Aplicada. Alvaro J. Ruiz Morales. Ed. Médica Panamericana 2015.

Books

-Epidemiología. Diseño y análisis de estudios. Mauricio Hernández Ávila. Ed. Médica Panamericana 2007

Webs

<http://www.seimc.org> / Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica. Documentos Científicos y Revista EIMC

<http://www.ecdc.europa.eu> / European Center for Diseases Prevention and Control

<http://www.cdc.gov/> Centers for Disease Control and Prevention, USA

<http://www.who.int/en/> Organització Mundial de la Salut

<http://www.isciii.es/> Instituto de Salud Carlos III Centro Nacional de Epidemiología

<http://www.gencat.cat> Generalitat de Catalunya Salut

<http://www.aspb.cat/> Agència de Salut Pública de Barcelona

Software

None

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.

Name	Group	Language	Semester	Turn
(SEM) Seminars	731	Catalan/Spanish	second semester	morning-mixed
(SEM) Seminars	732	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	73	Catalan	second semester	morning-mixed