

Epidemiology of Infectious Diseases

Code: 101011
ECTS Credits: 3

Degree	Type	Year	Semester
2500502 Microbiology	OB	3	2

Contact

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Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Maria Pilar Cortes Garmendia

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 it is intended that the student:

- Know the concepts on which the epidemiological studies of infectious diseases in humans are based.
- Know the microbiological techniques applicable to epidemiological studies.
- Know what is the situation of the most infectious diseases that concern the global level.
- Understand the measures we have in place to prevent the transmission of infectious diseases.
- Know the epidemiological surveillance systems.
- Know how to extract and correctly interpret the information regarding the epidemiology of infectious diseases in humans from specialized sources.

Competences

- Characterise the causal agents of microbial diseases in humans, animals and plants in order to diagnose and control them, perform epidemiological studies and be aware of present-day problems with these diseases and strategies to combat them.
- Obtain, select and manage information.
- Use bibliography or internet tools, specific to microbiology or other related disciplines, both in English and in the first language.
- Work individually or in groups, in multidisciplinary teams and in an international context.

Learning Outcomes

1. Identify and describe the microorganisms used in bioterrorism.
2. Know the usefulness of molecular techniques in the diagnosis of infectious diseases and in epidemiological studies.
3. Obtain, select and manage information.
4. Understand the fundamental principles of the epidemiology, treatment and prevention of infectious diseases.
5. Use bibliography or internet tools, specific to microbiology or other related disciplines, both in English and in the first language.
6. Work individually or in groups, in multidisciplinary teams and in an international context.

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.

Methodology

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	8	0.32	3, 6, 5
Theoretical classes	15	0.6	4, 2, 1, 3, 5
Type: Supervised			
Individual tutorials	3	0.12	
Type: Autonomous			
Preparation of seminars	19	0.76	3, 6, 5
Study	20	0.8	3, 6, 5
self-learning	8	0.32	3, 6, 5

Assessment

Theoretical classes. The evaluation of the theoretical contents of the subject, corresponding to the knowledge acquired in the theoretical classes, will be carried out by means of a written test that will represent 50% of the global note. To pass this part of the subject, the mark obtained in the written test will have to be equal to or greater than 5 points.

Seminars. Completion and presentation of a report about an infectious disease. The students will prepare a report on a particular infectious disease (20% of the global note). They will make a public presentation of the aforementioned report (20% of the global note).

Attendance at seminars and active participation. Attendance at seminars and active participation will represent 10% of the global note. The students will have to answer a series of questions about the report prepared in each seminar.

To pass the seminars, you must obtain a mark equal to or greater than 5 points.

To pass the subject, a minimum score of 5 points must be obtained in the evaluation of the theoretical contents and a minimum score of 5 points in the part of seminars. Students who fail the minimum qualification of the theoretical part will be able to take a recovery exam that will include the whole theoretical part, which will consist of a written exam and that will have a maximum score of 5 points. Students who fail to obtain a minimum mark of 5 points from the seminars will be able to do a recovery that will consist of the presentation of an epidemiological report plus a written exam about all the seminars carried out by their peers. This recovery will have a maximum score of 5 points.

To participate in the recovery, the students must have previously been evaluated in a set of activities whose weight equals to a minimum of two thirds of the total grade of the subject or module. Therefore, students will obtain the "Non-Valuable" qualification when the assessment activities carried out have a weighting of less than 67% in the final grade.

Single assessment

The students who choose the single assessment must do the written report in group and the seminars in face-to-face sessions since they are mandatory teaching activities. The evaluation will be the same as for the continuous assessment.

The single assessment consists of a final exam that will contain questions on the whole theoretical content of the subject and the questions related to the oral presentations he/she assists. This final assessment will correspond to the 60% of the final score of the subject. This single assessment test will be held coinciding with the same date for the last continuous assessment test. The same criterion will be applied to pass the subject as for the continuous assessment. The same retake system as for the continuous assessment will be applied.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance at seminars and active participation	10%	0	0	4
Realization and presentation of an epidemiological report	40%	0	0	3, 6, 5
Theoretical classes	50%	2	0.08	4, 2, 1, 3, 6, 5

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 CatalunyaSalut

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

Software

None