

Degree	Type	Year
2500502 Microbiology	OB	3

Contact

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Teachers

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Teaching groups languages

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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 prevention and control measures.
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, KM20, KM21, SM20, CM13
Theoretical classes	15	0.6	CM13, KM20, KM21, SM20, CM13
Type: Supervised			
Individual tutorials	3	0.12	CM13, CM14, KM20, KM21, SM20, CM13
Type: Autonomous			
Preparation of seminars	19	0.76	CM14, SM19, CM14
Study	20	0.8	CM13, CM14, KM20, KM21, SM19, SM20, CM13
self-learning	8	0.32	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

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance at seminars and active participation	10%	0	0	CM14
Realization and presentation of an epidemiological report	40%	0	0	CM13, CM14, KM20, KM21, SM19, SM20
Theoretical classes	50%	2	0.08	CM13, CM14, KM20, KM21, SM20

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.

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

Language list

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