Universitat Autònoma de Barcelona

**2020/2021**

# Epidemiology of Infectious Diseases

Code: 101011
ECTS Credits: 3

| Degree | Type | Year | Semester |
|---|---|---|---|
| 2500502 Microbiology | OB | 3 | 2 |

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

## Contact

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## Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

## 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.Bbioterrorism.

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.

*Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents.

*CONTENT OF THE SEMINARS

Attendance at all seminars is mandatory. In the seminars, students will prepare information on current issues in infectious diseases and will make an oral presentation.

*Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents.

## 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 prepare information on current issues in infectious diseases and will make an oral presentation.

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

*The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

## 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 2.5 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 2.5 points.

To pass the subject, a minimum score of 2.5 points must be obtained in the evaluation of the theoretical contents and a minimum score of 2.5 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 2.5 points. Students who fail to obtain a minimum mark of 2.5 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 2.5 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 weightingof less than 67% inthe finalgrade.

*Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

## 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

- HarrisonONLINE. Harrison, principios en medicina interna 16ª ed.

http://www.harrisonmedicina.com/resourceTOC.aspx?resourceID=100

- Microbiología y Parasitología Médica. Prats G. Editorial Médica Panamericana, 2012.

http://cataleg.uab.cat/record=b1934943~S1*cat

Books

-Microbiología y Parasitología Médica. Prats G. Editorial Médica Panamericana, 2012. (Signatura 579.61 Pra)

- Microbiología médica. Murray P. 6ª ed. Elsevier Science, 2009. (Signatura 579.61 Mic)

- Microbiología médica. Murray P. 5ª ed. Elsevier Science, 2007. (Signatura 579.61 Mur)

- Microbiología clínica. Prats G. Editorial Médica Panamericana, 2006. (Signatura 579.61 Pra).

-Microbiología Esencial. Martín A., Béjar V., Gutierrez J.C., Llagostera M. y Quesada E. 1ª edición. Editorial Médica Panamericana, 2019.

Webs

http://www.seimc.org

Sociedad Española deEnfermedades 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 SaludCarlos III Centro Nacional de Epidemiología

http://www.gencat.cat

Generalitat de CatalunyaSalut

http://www.aspb.cat/

Agència de Salut Pública de Barcelona