



MEDTEC SCHOOL

Course: PATHOLOGY, IMMUNOLOGY AND MICROBIOLOGY

Year: 3rd

Period: Annual

Credits: 4

Objectives

The course (19CFU) will offer an integrated introduction to the causes of cell, tissue and organ injuries (cellular pathology), the major microbial agents that cause human diseases (microbiology), the principal mechanisms of defense against pathogens and responses to injury (inflammation and immunity), and the general processes of the most relevant causes of human diseases (immunopathology, vascular pathology and oncology).

The module of Pathology aims to bring students closer to clinics by translating the basic knowledge of the first part of the course into its clinical counterpart illustrating the gross, microscopic and molecular features of disease, with particular attention to immunological and degenerative disorders. This part of the course will give a professionalizing profile, through student exposition to interactively presented and discussed case studies.

Prerequisites

General knowledge of cell biology, cell physiology, histology and anatomy.

Contents

The course will be divided into 4 modules:

1: General pathology (5CFU). This module will be divided into 4 topics:

Cellular pathology (0,5CFU)

Tumor biology (1CFU)

Innate immunity and inflammation (3CFU)

Vascular pathology (0,5CFU)

2: Microbiology (5CFU). This module will be divided into 2 topics

Basic concepts of microbiology (1CFU)

Medical microbiology (4CFU)

3: Immunology and immunopathology (5CFU). This module will be divided into 3 topics

Mucosal immune system and microbiota (1CFU)

Adaptive immunity (2CFU)

Immunopathology (2CFU)

4: Anatomical pathology (4CFU).

Teaching Methods



Lectures: the main purpose of lectures is to transfer knowledge to students by guiding them through the most relevant subjects of the disciplines. Collaborative lessons with teachers of the course and recap lessons will be done in order to increase the integration of the different modules. Students who are unable to be present on campus due to the pandemic will participate on-line.

Small group activities: the purpose of these activities is to activate and solidify knowledge acquired during lectures and independent study, in a collaborative learning setting. Students who are unable to be present on campus due to the pandemic will participate on-line.

Verification of learning

Students' evaluation will be assessed through multiple choice examinations at the end of the year. The faculty reserves the possibility to have also an oral exam.

Exam content and evaluation

During the first session of the exam, the student will have the option to attempt the whole exam (PIMtotal) or to attempt half of the questions (PIM1).

Depending on his/her choice and the result of the exam (PIM1, see below), the student will be allowed to attempt only PIM2 or the whole exam in the following sessions.

PIM 1 (9,5 CFU) 33 questions (each question 0.5 points):

- General pathology (5CFU) 17questions:

Cellular pathology 2q

Tumor biology 4q

Innate immunity and inflammation 9q

Vascular pathology 2q

-Microbiology I (2,5 CFU) 9 questions

Basic concepts of microbiology 2q

Medical microbiology 7q

- Anatomical pathology I (2CFU) 7questions.

To pass the test PIM1 the student will have to answer to at least 18 questions correctly with a minimum of correct answers in each module:

general pathology (9 correct answers)

microbiology (5 correct answers)

anatomical pathology (4 correct answers).

PIM 2 (9,5 CFU) 33 questions (each question 0.5 points).

- Microbiology II (2,5CFU) 8questions

- Immunology and immunopathology (5CFU) 17questions:

Mucosal immune system and microbiota 3q

Adaptive immunity 7q

Immunopathology 7q

- Anatomical pathology II (2CFU) 8questions.



To pass the test PIM2, the student will have to answer to at least 18 questions correctly with a minimum of correct answers in each module:

microbiology II (4 correct answers)
immunology and immunopathology (9 correct answers)
anatomical pathology II (5 correct answers).

For microbiology, students can ask the oral exam in which we will evaluate deepen the research project that the students have developed during the course (see below).

Full exam (PIMtotal)

Content of Exam (66 questions each question 0.5 points):

- General pathology (17q):
cellular pathology 2q.
innate immunity and inflammation 9q.
vascular pathology 2q.
tumor biology 4q.

- Microbiology (17 q).
Basic concepts of microbiology 2q
Medical microbiology 15q

During the course students will develop and present different research projects with the following goals:

1-correlation between diseases / dysbiosis (caused by real / opportunistic pathogens or by molecules produced by them) and the development of pathologies.
2-identification of new biomarkers of microbiological origin.
3-development and extension of technologies for the monitoring and treatment of pathologies.

- Immunology and immunopathology (17q):
Adaptive Immunity 7q.
Mucosal immunology 3q.
Immunopathology 7q.

- Anatomical pathology (15q).

To pass the test, the student will have to answer to at least 36 questions correctly with a minimum of correct answers in each module:

general pathology (9 correct answers),
microbiology (9 correct answers),
Immunology and immunopathology (9 correct answers)
anatomical pathology (8 correct answers).

For microbiology, students can ask the oral exam in which we will evaluate deepen the research project that the students have developed during the course.

More than 60 correct answers (Full exam or PIM1+PIM2) = 30 lode

Texts

Robbins and Cotran
Pathologic Basis of Diseases,
9th edition, 2014; Elsevier



Cellular and molecular immunology
8th edition, 2011; Elsevier

Bauman RW
Microbiology with Diseases by Taxonomy
4th edition, Pearson