

Faculty of Medicine**MCBL1330 Medical Microbiology**

[50h+12.5h exercises] 6 credits

Teacher(s): Michel Delmée, Patrick Goubau
Language: French
Level: First cycle

Aims

At the end of this course, the student should have acquired a general knowledge of the main micro-organisms (bacteria, viruses, parasites, fungi and helminths) implicated in human pathology, including the main phenotypic and genotypic characteristics, the virulence factors, and the epidemiology. It should allow to understand the physiopathology, the diagnosis, the prevention and the basic principles of the treatment of the principal human infectious diseases. Technical aspects of the diagnosis and the treatment are not within the scope of this course.

Main themes

The course comprises two parts, the first one reviewing the basic aspects of microbiology and infectious diseases and the second one consisting of a systematic review of the human pathogens. The virology is considered separately from the bacteriology, the mycology and the parasitology.

In the general bacteriology part, the host-microbe relationship at the level of the individuals and of the populations is described as well as the basic principles of antimicrobial treatments and resistance. By the description of several paradigmatic examples, the student is initiated to the various relationships which exist between the human body and the microbial world.

Thereafter, the different peculiarities of infectious diseases according to anatomic sites are reviewed in details by describing the characteristics of the main micro-organisms implicated in pathologies of the respiratory tract, the urinary tract, the central nervous system, the digestive tract, the skin and mucosae, and the genital tract. Mycology and parasitology constitute two separate chapters as well as hospital epidemiology.

In the general virology part, several aspects of basic virology necessary to the understanding of the pathologies, are approached as well as the main aspects of diagnosis and treatment of viral infections and viral vaccines.

In the systematic part, individual viruses are described with a priority to those which are frequently implicated or which cause a substantial morbidity or mortality in our population like hepatitis, AIDS or herpes viruses. This list is not complete.

A series of four sessions of practical exercises allow the students to practise basic techniques used in microbiology laboratories : microscopic examinations, bacterial cultures, identification, microbial susceptibility testings and serological tests.

Content and teaching methods

Bacteriology, mycology, parasitology.

General part :

Host-pathogen relationship at the cellular and molecular levels : microbial ecology, virulence factors, genetic regulation.

Vaccines design.

Epidemiology of community- or hospital-acquired. infectious diseases.

Basics of antimicrobial therapy.

Systematic part.

- general overview of human microbial pathogens.
- micro-organisms implicated in infection of the upper and lower respiratory tracts;
- micro-organisms implicated in infection of the urinary tract;
- micro-organisms implicated in infection of the central nervous system;
- micro-organisms implicated in infection of the digestive tract;
- micro-organisms implicated in infection of the skin and the sub-cutaneous tissues;
- micro-organisms implicated in infection of the genital tract;
- parasitology
- mycology
- helminthology

Virology

General part

- structure, taxonomy, viral cycle
- genetic variation
- elements of pathogenesis
- general aspects of diagnosis
- immunisation and treatment

Systematic part

- herpes viruses
- hepatitis viruses
- retroviruses
- picornaviruses
- parvovirus B19
- papovaviruses
- adenoviruses
- poxviruses
- viruses implicated in diarrhoea
- rubella virus
- orthomyxoviruses
- paramyxoviruses
- arboviruses, arenaviruses and filoviruses
- rabies virus
- hantavirus

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

The course consists of a series of public lectures with a lot of illustrations.

A specific textbook (syllabus) is provided to the student.

The textbook as well as the main slides shown during the courses are available on iCampus.

(<http://www.icampus.ucl.ac.be/MBLG1130/>)

A forum is open on iCampus : it allows the student to ask questions about any problem encountered.

A series of four sessions of practical exercises is organised during the year to allow the student to culture, identify and determine the susceptibility to antimicrobial agents of bacteria.

Prerequisite : Courses of General Biology and General Microbiology.

Evaluation : written examination with open questions of short type.

Other credits in programs

MED12BA	Deuxième année de bachelier en médecine	(6 credits)	
MED13BA	Troisième année de bachelier en médecine	(6 credits)	Mandatory