UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Microbiology and Virology

1920-2-H4102D011-H4102D032M

Aims

The course aims to provide the students with knowledge on the fundamental principles of the microbial etiology and pathogenesis of the major human infectious diseases.

Contents

General characteristics of microbial pathogens.

Microbial genetics.

Microbial pathogenesis.

General characteristics of bacterial pathogens.

Virulence factors and mechanisms of bacterial pathogenesis.

Bacterial pathogens and associated diseases.

Viral pathogens and associated diseases and viral-induced oncogenesis.

Major fungal and protozoal human pathogens.

Principles of laboratory diagnosis of infectious diseases.

Antimicrobial agents and resistance.

Strategies for infectious diseases prevention and control.

Health Care Associated Infections.

Detailed program

General characteristics of human microbial pathogens. Infection: Basic concepts.

General characteristics of bacterial pathogens.

Bacterial genetics and mechanisms of horizontal gene transfer in bacteria.

Virulence factors and mechanisms of pathogenesis of bacterial infections.

Bacterial pathogens: *Staphylococcus* spp., *Streptococcus* spp., *Enterococcus* spp., *Bacillus* spp., *Clostridium* spp., *Neisseria* spp., *Haemophilus* spp., Enterobacteriaceae *Pseudomonas* spp., *Acinetobacter* spp. *Mycobacteria* spp. and other bacterial pathogens such as *Legionella* spp., *Vibrio* spp., *Campylobacter* spp., *Helicobacter* spp., *Listeria* spp., *Mycoplasma* spp., *Chlamydia* and *Rickettsia*.

Viral genetics and pathogenesis of viral infections.

Pathogenic viruses: Herpesviruses, Adenovirus, Human Papilloma Virus, Hepatitis viruses, Influenza, Parainfluenza, Respiratory Syncytial Virus, Viruses of Mumps, Measles and Rubella, Enteroviruses, Viruses associated with diarrhoea, Retroviruses.

Main fungal and protozoal human pathogens.

Antimicrobial agents: mechanisms of action, methods to evaluate their in vitro antimicrobial activity and acquisition of resistance.

Laboratory methods for the diagnosis of infectious diseases: direct and indirect methods.

Molecular diagnostics applied to Medical Microbiology.

Strategies for infectious diseases prevention: vaccines and protocols for infection control.

Health Care Associated Infections.

Prerequisites

Knowledge on the principles of Cell Biology, Genetics and Anatomy as acquired during the first year of the degree course.

Teaching form

Lessons and interactive discussion of clinical cases.

Textbook and teaching resource

Sherris “Medical Microbiology”, McGraw Hill.

Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller “Medical Microbiology”?, Elsevier.

Semester

First Semester of the 2° year of the degree course.

Assessment method

The exam will include an initial written evaluation made up of 20 multiple choice questions and of 2 open questions on any of the topics illustrated and discussed as part of the Medical Microbiology module. The written exam will subsequently be integrated with an oral discussion aimed at evaluating the student’s degree of comprehension of the topics part of the Medical Microbiology module.

Office hours

Appointments on request.