UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Microbiology

2223-2-I0302D007-I0302D025M

Aims

- Description of the morphological, functional and metabolic characteristics of different microorganisms.
- Explanation of the fundamentals of microbial genetic code, gene expression regulation and nature of mutations and gene recombination.
- Description of the host-microbe relationships and the mechanisms of microbial pathogenicity.

Contents

At the end of the course the student must have acquired the basic concepts regarding the morpho-functional and metabolic characteristics of microorganisms, their genetic code, the regulation of gene expression and the host-microorganism relationship.

Detailed program

THE BACTERIAL CELL:
Features, morphology and structures. Morphology: size, shape, and grouping. Gram stain and Ziehl-Neelsen (microscopy examination and staining). The cytoplasm. The bacterial ribosomes. Cytoplasmic membrane. The cell wall. The capsule. The flagella. The fimbriae. Mode of bacterial growth. The production and spore germination. Bacterial Classification.

BACTERIAL GENETICS:
The bacterial chromosome. Plasmids. Insertion sequences, transposable elements and reversible. Expression of the bacterial genome. Mutations. Intercellular transfer and recombination of the genetic material. Transformation. Transduction. Lysogenic conversion. Bacterial conjugation.

BACTERIAL METABOLISM:
Characteristics of bacterial metabolism. Biochemical tests commonly used for the identification of bacteria.

BACTERIA-HOST RELATIONSHIPS:
Colonization. Bacterial adhesion and penetration in host tissues. Toxigenic bacteria. Main features and mechanism of action of exotoxin and endotoxin.

VIRUSES:
General characteristics, morphology, structures, replication and pathogenesis. Some examples.

FUNGI:
Fungal general characteristics, morphology, structures, replication and pathogenesis. Some examples.

PARASITES and PROTOZOA:
General characteristics, morphology, structures, replication and pathogenesis. Some examples.

Prerequisites

Basic knowledges dealing with biology, genetic and biochemistry

Teaching form

Lesson in attendance, subject to any ministerial changes following the COVID pandemic situation

Textbook and teaching resource

MICROBIOLOGIA E MICROBIOLOGIA CLINICA (per i Corsi di Laurea in Professioni sanitarie) ed. PICCIN

Semester

First semester

Assessment method

Written "in itinere" test (multiple choice test) to evaluate global knowledges about course program

Test in attendance, subject to any ministerial changes following the COVID pandemic situation

Office hours

By appointment required by mail

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING