

**English Degree Course in Medicine and Surgery (2Y 1S) - BEMC
2020/2021**

Microbiology and Clinical microbiology

Lecturers:

- Prof. Domenico Otranto (Parasitology)
- Prof. Luigi Santacroce (Microbiology, Clinical Microbiology and Virology)

The microbial world: bacteria, viruses and fungi

Elements of microbiological taxonomy

Bacterial cell structures and their functions

Metabolism and cultivation of bacteria

Bacterial reproduction and bacterial spores

Basics of bacterial genetics (mutations, genetic recombination)

Antibacterial drugs and their mechanism of action

The antibiotic resistance. Sensitivity tests

Virus Classification and Structures

The infectious cycle: Attachment, entry, replication and assembly

Virus-host interactions

Antiviral Drugs

Fungi: main features and cultivation

Relationships between microorganisms and host. Natural defenses of the organism. Immune response and survival strategy of infectious agents.

Transmission, diffusion and replication of microorganisms. Persistent infections. Clinical manifestations and diagnosis of infections of individual body areas. Pathogenesis of mycoses. Prevention of infections and infectious diseases. Chemical and physical agents for the control of microorganisms.

Anti-infective chemotherapy. Serological and molecular diagnostics.

Vaccines.

Systematic bacteriology:

Staphylococci (Staphylococcus aureus, coagulase negative staphylococci and micrococci), Streptococci and enterococci, Pneumococci, Bacillus anthracis and Bacillus cereus, Corynebacterium diphtheriae, Listeria monocytogens, Gardnerella vaginalis, Actinomycetes (Neisseria meningitidis, Neisseria

gonorrhoeae, Moraxella), Mycobacteria (Mycobacterium tuberculosis, Mycobacterium leprae) and MOTT (Mycobacteria other than tuberculosis), Enterobacteria (E.coli, Salmonella, Shigella, Klebsiella, Citrobacter, Enterobacter, Serratia, Proteus and Yersinia), Vibrio cholerae, Aeromonas, Spirilli, Campylobacter, Helicobacter pylori, Pasteurella, Brucella, Hemophilus spp, Bordetella (Bordetella pertussis), Pseudomonas aeruginosa, Acinetobacter, Alcaligenes, Flavobacterium. Actinobacillus, Legionella (Legionella pneumophila), Clostridia (Clostridium tetani, Clostridium botulinum, Clostridium perfringens), Spirochetes (Treponema pallidum, Borrelia and Leptospira), Bartonella spp, Rickettsia spp, Ehrlichia spp, Chlamydia (Chlamydia trachomatis, Chlamydia pneumoniae) and Mycoplasma spp.

Systematic virology:

DNA viruses: Papovavirus, Herpesvirus, Adenovirus, Parvovirus, Poxvirus, Hepadnavirus.

RNA viruses: Picornavirus, Coronavirus, Orthomyxovirus, Paramyxovirus, Rabdovirus, Filovirus, Hepatitis viruses (A, C, D, G, E), Reovirus and enteric viruses, Togavirus, Flavivirus, Retrovirus (HIV). Prions.

Systematic mycology:

Dermatophytes, Malessezia furfur, Candida spp, Cryptococcus neoformans, Aspergilli

General aspects on parasites and vectors and their interactions with hosts

Parasites and parasitism. Elements of taxonomy. Morphological and physiological characteristics of protozoa, helminths and arthropods. Host-parasite relationship. Direct and indirect biological life cycles. Epidemiological role played by vectors in the spread of parasites to humans. Zoonoses.

Protozoa

Apicomplexa: *Toxoplasma gondii*, *Cryptosporidium* spp., *Sarcocystis* spp., *Isospora* spp.,

Cyclospora spp. and *Plasmodium* spp.

Sarcomastigophora: *Giardia* spp., *Trichomonas* spp., *Trypanosoma* spp., *Leishmania* spp.,

Entamoeba spp., *Dientamoeba* spp. and *Naegleria* spp.

Ciliophora: *Balantidium* spp.

Platyhelminthes

Cestoda Class: *Taenia* spp., *Hymenolepis* spp., *Diphyllobothrium* spp.; Larval cestodes in

tissues (i.e., hydatid and *Cysticercus* spp.)

Trematoda Class: *Opisthorchis* spp., *Fasciola* spp., *Schistosoma* spp., *Clonorchis* spp., *Paragonimus* spp.

Nematoda

Order Strongylida: *Ancylostoma* spp.; Ascaridida: *Ascaris* spp. and *Anisakis* spp.; Oxyurida:

Enterobius spp.; Rhabditida: *Strongyloides* spp.; Spirurida: *Dirofilaria* spp., *Thelazia*

callipaeda, *Onchocerca* spp., *Wuchereria* spp., *Brugia* spp. and *Loa loa*;

Trichocephalida:

Trichuris spp., *Trichinella* spp.

Arthropoda

Class Insecta; Order: Hemiptera, Diptera, Phthiraptera and Siphonaptera; Family: Culicidae,

Psychodidae, Muscidae, Simuliidae, Glossinidae and Calliphoridae

Class Arachnida; Order: Parasiteformes and Acariformes

Suggested textbooks

Patrick Murray. Basic Medical Microbiology, 1st Edition, 2017. Elsevier

Patrick Murray, Ken S. Rosenthal, and Michael A. Pfaller. Medical Microbiology, 8th Edition, 2016. Elsevier

Burton Bogitsh, Clint Carter and Thomas Oeltmann, Human. Parasitology, 5th Edition, Elsevier, 2018

Any other textbook of medical microbiology may be considered, if recent

Examination methods: written test.

Exams' schedule and board are available at the following link:

<http://www.studenti.ict.uniba.it/esse3/ListaAppelliOfferta.do;jsessionid=F0E04B82877B7EB2B63673436E3CC9D4.jvm2b>