English Degree Course in Medicine and Surgery (2Y 1S) - BEMC 2019/2020

Microbiology and Clinical microbiology

Lecturers:

- Prof. Giuseppe Miragliotta (Microbiology)
- Prof. Domenico Otranto (Parasitology)
- Prof. Luigi Santacroce (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, Moraxelle), Mycobacteria (Mycobacterium tubercolosis, 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, Helycobacter pylori, Pasteurella, Brucella, Hemophilus spp, Bordetella (Bordetella pertussis), Pseudomonas aeruginosa, Acinetobacter, Alcaligenes, Flavobacterium. Actynobacillus, 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: *Opistorchis* 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