UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## General Human Sciences

**2324-2-H4601D005**

### Aims

Preparation of expert odontologists by the acquisition of knowledge in different disciplines:

- General Pathology: etiopathogenesis of pathological processes, in particular related to odontopathology.

- Microbiology: microbial agents responsible for infections and diseases of both general and odontostomatologic interests and understand the principles of microbiological diagnostics.

- Clinical Pathology: meaning of laboratory tests, their clinical and scientific relevance and their appropriate use.

### Contents

- General Pathology: knowledge of causes and general mechanisms of pathological processes (etipathogenesis). Appropriate technical/scientific terminology. Pathogenetic and physiopathologic knowledge to appropriately follow the successive clinical courses.

- Microbiology: modules allow students to know the microbial agents responsible for infections and diseases of interest to both general and odontostomatologic and understand the principles of microbiological diagnostics.

- Clinical Pathology: the contribution of Clinical Pathology -in promoting health at the level of prevention, diagnosis and cure, -defining the etiopathogenesis of the different pathological situations, -evaluating the functional alterations of organs and control mechanisms at the different integration of structures, functions and organism in relation with the knowledge of physiology and pathology acquired during the present year. Basic principles, arising from physiopathological knowledge, for prescription and interpretation of lab test results, hints at differential diagnosis. Knowledge about the methodology of Clinical Pathology lab, hints on collection, transport and storage of biological samples; the key role played by health operators on the efficiency of National Health Service performing appropriate prescription and interpretation of lab tests. These issues will be highlighted in the course of the

systematic part described in the extensive program.

## Detailed program

- General Pathology: Etiology, pathogenesis. Acquired, congenital, inherited, acute and chronic degenerative diseases. Immunity, immune response, primary and secondary response. Vaccination. Immunopathology. Hypersensitivity. Ionizing radiation pathology. Burns. Acute and chronic inflammation. Fever, leukocytosis, acute phase proteins. Wound repair. Granulation and cicatricial tissue. Fibrosis. Amyloidosis. Cell death. Atherosclerosis. Hypertrophy. Hyperplasia. Hypotrophy. Organ failure. Compensation.
Preneoplastic lesions. Benign and malign tumors. Carcinogenesis (chemical, physical and biological). Oncogenes and tumor suppressors, genes for DNA repair. Hereditary tumors. Angiogenesis and metastasis. Hormone and tumor. Tumor metabolism. Neoplastic cachexia. Coagulation, hemophilia, thrombosis, embolism, infarct. Thalassemia. Diabetes. Ageing.

- Microbiology: General characteristics and classification of bacteria, viruses, fungi and protozoa pathogenic to humans. Host-parasite interactions. Mechanisms of microbial pathogenity. Physical and chemical methods for disinfection and sterilization. Infection control. Main methods useful in microbiological diagnostics. Main classes of antimicrobial agents. Prophylaxis of infections and use of vaccines. The microbial habitat of the oral cavity. Microbiology of dental plaque and microbial biofilm: structure and organization. Microbiological aspects of dental caries. Microbiological aspects of periodontal diseases. Microbiological aspects of infections of the mouth. Notes on antimicrobial therapy and prophylaxis of oral infections.

- Clinical Pathology: the contribution of Clinical Pathology -in promoting health at the level of prevention, diagnosis and cure, -defining the etiopathogenesis of the different pathological situations, -evaluating the functional alterations of organs and control mechanisms at the different integration of structures, functions and organism in relation with the knowledge of physiology and pathology acquired during the present year. Reminders of characteristics of tests and methods of Clinical Pathology Lab: Error, Precision, Accuracy, sensitivity, specificity, predictive value. Request of lab test in the NHS. Basic principles arising from physiopathological knowledge, for prescription and interpretation of test results with hints at differential diagnosis using the followed lab tests:-Anemia: Hemochromocytometric test. -Congenital and/or acquired coagulation defects: Prothrombin Time , International Normalized Ratio (INR) Activated Partial Thromboplastin Time, Fibrinogen, Coagulation factors. -Inflammation: Erythrocyte Sedimentation Rate, C-Reactive protein. -Proteins: Electrophoresis, Specific proteins. -Immunology, Allergology: Autoimmunity Test, Total and specific IgE. -Blood group. -Liver function: Alanine aminotransferase, Aspartate aminotransferase, Bilirubine, Alkaline phosphatase, Gamma-glutamyl transpeptidase, Serological test for the detection of hepatitis. -Kidney function: plasma Creatinine, Estimated Glomerular Filtration Rate, Urinalysis. -Tumors: specific markers. Test in multi-organ pathologies: -Diabetes: plasma Glucose, daily glycemic profile, Oral Glucose Tolerance Test, Glycated hemoglobin. -Atherosclerosis: lipid profiles -Myocardial infarction: Troponin.

## Prerequisites

Knowledge concerning the previous preparatory courses.

## Teaching form

Frontal lessons, exercitations, laboratory stages.

## Textbook and teaching resource

- Pontieri, Russo, Frati Patologia Generale - V ed. - Piccin

- Robbins e Cotran - Le basi patologiche delle malattie - IX ed. - Elsevier;

- Majno e Joris Cellule, tessuti e malattia - I principi della Patologia Generale - Casa Editrice Ambrosiana;

- Abbas A.B., Lichtman A.H. Fondamenti di Immunologia. Funzioni e alterazioni del sistema immunitario. Piccin.

- Microbiologia - P.R. Murray, Ken Rosenthal, G.S. Kobayasky, M.A. Pfaller. EdiSES.

- Microbiologia Odontoiatrica (4°edizione), P.D. Marsh, M. Martin. UNI.NOVA- Oral Microbiology (5th edition) - P.D. Marsh, M. Martin. CHURCHILL LIVINGSTONE ELSEVIER

- Burtis, Tietz Textbook of Clinical Chemistry and Molecular Diagnostics Ed Saunders 2006

- Henry, Clinical diagnosis and management by laboratory methods Ed Saunders 2007

- Hovanitz, Laboratory Medicine Ed. Churchill Livingstone 1991- FOR ALL THE MODULES: Slides and pertinent bibliography

## Semester

Annual course, at the second year.

## Assessment method

The assessment method is described in the single modules.

The final score will be the weighted mean of the tests.

## Office hours

By appointment.

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING