



## **MEDICINE AND SURGERY**

**Course: FOUNDATION FOR SYSTEM DISEASES**

**Year: 3<sup>rd</sup>**

**Period: 1<sup>st</sup> Semester**

**Credits: 7 CFU (PHARMACOLOGY 3 CFU, BIOCHEMISTRY 2 CFU, DIAGNOSTIC IMAGING AND RADIOTHERAPY 1 CFU, PATHOLOGY 1 CFU).**

### **Objectives**

Foundations for system diseases is an integrated course composed by four different modules, Pharmacology, Biochemistry, Imaging and Pathology. The purpose of this course is to lay solid foundations of this specific topics,

which represent the main pillars of the subsequent course of System Disease I and II. The knowledge provides by this course, together with some in-deeper lecture on specific topic held by expert in the field, will be instrumental for the students to reach a proper introduction of these modules.

The module of Pharmacology is focused on general concepts of Pharmacology which represent the fundamental background for facing system diseases. In particular, the course will be a comprehensive course dealing with concepts of pharmacokinetics, pharmacodynamics chemotherapy, providing an essential understanding about interactions between pharmaceutical drugs and human body.

The module of Clinical Biochemistry is focused on general concepts of Laboratory Medicine, which represent the fundamental background to assist clinicians to substantiate diagnoses, help preventing diseases and monitoring treatments. In particular, the module will be a comprehensive course dealing with the general concepts on prescribing clinical analyses, obtaining results and their interpretation.

This module introduces students to Pathology: a topic that can be considered the central core of modern medicine, i.e. the study of the morphological changes produced by a disease in the normal structure of an organ and its function. As such, pathology is a powerful tool to understand the clinical features of the diseases of individual organs and systems.

### **Prerequisites**

To be allowed to the CMP exam students must have passed the exam of "Principles of the living matter".



## **Contents**

### **MODULE OF PHARMACOLOGY**

**Topic 1: PRINCIPLE OF PHARMACOKINETIS** Number of lessons  
3 (6 hours).

**Topic 2: PRINCIPLES OF PHARMACODYNAMICS** Number of lessons: 4 (8 hours)

**Topic 3: DRUGS ACTING ON THE AUTONOMIC NERVOUS SYSTEM**  
Number of lessons: 2 (4 hours)

**Topic 4: CHEMOTHERAPY OF MICROBIAL AND PARASITE DISEASES** Number of lesson: 6 (12 hours)

**Topic 5: DRUG THERAPY OF INFLAMMATION**  
Number of lesson: 2 (3 hours)

**Topic 6: CHOLESTROL AND TRYGLICERIDES LOWERING DRUGS**  
Number of lesson: 1 (1 hour)

### **MODULE OF BIOCHEMISTRY**

**Topic 1. Aims and fields of the clinical laboratory**

**Topic 2. Laboratory organization**

**Topic 3. Laboratory test prescription**

**Topic 4. General characteristics of laboratory tests**

**Topic 5. Types of errors in laboratory medicine**

**Topic 6. Reference intervals**



**Topic 7. Decision levels**

**Topic 8. Risk estimation**

**Topic 9. Preparation of patients to blood sampling**

**Topic 9. Biological specimens**

**Topic 10. Pre-analytical variability of blood tests**

**Topic 11. Expression of results in laboratory medicine**

**Topic 12. Types of methods in laboratory medicine**

**Topic 13. Serum proteins**

**Topic 14. Testing for Hemostasis**

**Topic 15. Testing for thrombosis**

**Topic 16. Monitoring drugs**

## **MODULE OF DIAGNOSTIC IMAGING AND RADIOTHERAPY**

**Physical principles that form the basis of diagnostic imaging techniques (radiology, computed tomography, magnetic resonance, ultrasound single photon emission tomography, positron emission tomography), interventional radiology, radionuclide therapy and radiotherapy**

**General aspects of technologies used to generate medical images**

**General aspects of technologies used in radiation therapy**

**Characteristics of the different disciplines: Radiology, Nuclear Medicine and Radiotherapy, what they have in common and what are their peculiarities**

**General principles related to the appropriate use of diagnostic imaging**



**Understand the main indications of radiotherapy in the multidisciplinary approach to patient's treatment**

**Basic information for the safe use of ionising radiation in medicine**

## **MODULE OF DIAGNOSTIC IMAGING AND RADIOTHERAPY**

**TOPIC 1: What is pathology?**

**TOPIC 2: The pathologist at work: a fascinating mission.**

**TOPIC 3: The pathologist's report**

**TOPIC 4: The clinical pathological correlations**

### **Teaching Methods**

Fronctal lectures and flipped classes.

### **Verification of learning**

The evaluation of the content of Foundations for system disease is organized to ensure a proper and well- balanced assessment of the students' knowledge in all the modules of the course. The exam will be based on multiple choice-like test in which the number of questions of each module is proportional to the number of credits. The details of the exam will be better explained at the end of the course.

### **Texts**

Title: "Basic & Clinical Pharmacology"

Author: Bertram G. Katzung Anthony J. Trevor

Title: "The Pharmacological Basis of Therapeutics"

Author: Goodman & Gilman

Title: "Pharmacology"

Author: Rang and Dale



Title: "General and Molecular Pharmacology: Principles of Drug Action"

Author: Clementi and Fumagalli

Widman's Clinical Interpretation of Laboratory Tests. RA Sacher, RA McPherson. Ed.

FA Davis Company, Philadelphia.

Robbins and Cotran, Pathologic Basis of disease, 10<sup>th</sup> Edition

The PowerPoint presentations used across lectures will be made available