



## **FOUNDATIONS FOR SYSTEM DISEASES**

**Course: Foundations for System Diseases**

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

**Period: (1<sup>st</sup> semester)**

**Credits: 7**

**Faculty: Michela Mattedi, Maurizio Diraki, Arturo Chiti, Amaro Tipodi, Luca Di Tommaso, Martina Solini, Gio Fianese, Luigi Tenaciano, Massimo Ronzani, Lorenzo Renne, Davide Pozzi**



## **PHARMACOLOGY**

**Faculty: Davide Pozzi, Michela Matteoli, Maurizio Di Iacopi, Riccardo Fesce**

**Year/Semester**

**3<sup>rd</sup> year/1<sup>st</sup> semester**

**Credits**

**3CFU**

**Textbooks**

**Title: "Basic & Clinical Pharmacology"**

**Author: Bertram G. Katzung Anthony J Trevor**

**Title: "Goodman and Gilman's The Pharmacological Basis of Therapeutics"**

**Author: Laurence Burton, Hon Kolman (13 Edition)**

**Title: "Pharmacology"**

**Author: Rangand Dale**

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

**Author: Clementi and Funagalli**

**Overview**

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

**J.®.asiig \***





**Topic 5 CHEMOTHERAPY OF MICROBIAL AND PARASITIC DISEASES**  
**Learning goals**





### **Learning goals**

**Understanding the aims and the fields of the clinical laboratory**

#### **Topic 2 Laboratory organization**

### **Learning goals**

**Core laboratory, specialized laboratory, emergency laboratory, point of care laboratory**

#### **Topic 3 Laboratory test prescription**

### **Learning goals**

**Understanding the indications to prescribe laboratory tests, their limitation and appropriateness of prescription**

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

### **Learning goals**

**Understanding the concept of precision, accuracy, analytical sensitivity, diagnostic sensitivity & specificity and their estimation**

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

### **Learning goals**

**Understanding the concept, causes and consequences of casual, systematic and gross errors and their estimation**

#### **Topic 6 Reference intervals**

### **Learning goals**

**Understanding the concept of reference interval and the parameters for its estimation (eg, frequency distribution, mean, standard deviation, percentiles)**

#### **Topic 7 Decision levels**

**Understand the concept of “decision levels” in special clinical situations (eg, risk levels of cardiovascular disease owing to hypercholesterolemia, diagnosis of acute versus thromboembolism, etc).**

#### **Topic 8 Risk estimation**

### **Learning goals**

**Understanding the concept of Odds Ratios and their significance in the risk estimation of diseases associated with the presence/absence of genetic polymorphisms**



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

#### **Learning goals**

Understanding on how to prepare patients to blood sampling and the impact that some variables (eg, timing of blood drawing, circadian variation, fasting, physical & emotional status) may have on results interpretation

### **Topic 9 Biological specimens**

#### **Learning goals**

Types of biological specimens (eg, blood, urine, etc) and the modality of blood drawing (eg, syringe, plastic tube, vacuum devices, etc). How to collect urine specimens

### **Topic 10 Preparation of plasma**

#### **Learning goals**

Understanding on how to centrifuge blood, prepare and store plasma until the analysis and their impact on laboratory results

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

#### **Learning goals**

Understanding the concept of concentration & activity measurements and their differences

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

#### **Learning goals**

Understand the principles of the polymerase chain reaction and search for genetic polymorphisms and their diagnostic significance; main immunochimistry methods and their characteristics (eg, radial immune diffusion, immune electrophoresis, latex agglutination, nephelometry, ELISA, etc).

### **Topic 13 Serum proteins**

#### **Learning goals**

Understanding the general characteristics of serum proteins. Protein separation and quantitation. Immunoelectrophoresis. Immunofixation. Immunodiffusion. Immunoprecipitation. Immunofixation. Immunodiffusion. Immunoprecipitation.



### **Learning goals**

**Revision of the concepts of blood coagulation. Understanding the translational relevance that the laboratory diagnosis of hemorrhagic coagulopathies may have across different medical specialties or organs, including their method of investigation**





## **DAGNOSTICIMAGNGANDRADIOHERAPY**

**Faculty: Arturo Chiti, Martina Solfini, Gio Franesse**

**Credits**

**1 CFU**

### **Teaching Methods**

**Lectures, recorded lectures, flipped classrooms, clinical case presentation and interactive discussion**

**At the end of the course there will be a general wrap up with small groups discussions**

### **Learning goals**

**Understand the physical principles that form the basis of diagnostic imaging**



**Bart and Helms's Fundamentals of Diagnostic Radiology, 5th Edition Jeffrey Klein, Emily N. Vinson, William E. Bart**

**Radiation Oncology Primer and Review Essential Concepts and Protocols George Rodrigues MD, RCP, CMC, Vikram Velker MD, Lara Best MD**

## **INTRODUCTION TO PATHOLOGY**

**Faculty: Luigi Tenaciano, Massimo Roncali, Luca Di Tommaso, Lorenzo Remè**

### **Textbooks**

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

### **Overview**

**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**

**Knowledge of:**

- normal anatomy and histology;
- physiology;
- biochemistry

### **Learning/teaching methods**

**The Module will be organized as follows:**

**Synchronous sessions**

**Asynchronous sessions**

**The Synchronous sessions will be organized as formal lessons (IEAMS on campus) and**

**as collaborative activities for medium-sized groups to clarify the doubts related to what is**

**proposed in the asynchronous sessions.**

**The Asynchronous sessions (Off Campus) will be characterized by recorded lessons and/or**

**in-depth articles related to specific topics.**



### **Examination**

**The knowledge and abilities developed during this course of Foundation in pathology, will be verified during an oral exam at the end of the course of Pathology.**

h sco d

### **Learning goals**

**At the end of the Course, students should have knowledge and understanding skills to be able to describe what is pathology; what are the main areas of application of pathology in the modern medicine; how does pathology integrate in the management of a patient.**

**In particular, students should know**

**1 the type and differences of materials routinely examined in pathology (fresh, fixed, frozen);**

**2 the type and differences of fields in pathology (cytological, histological, molecular and frozen);**

**3 the principles of gross and microscopic evaluation;**

**4 Use of cytology and/or histology in the management of oncological patients**

**5 Basic principles and clinical significance of immunohistochemistry**

1 les of in the cc



**Beyond morphology: the phenotype aiding to prove the histopathological diagnosis**  
**The role of pathology in the predictive/precision medicine**

**TOPIC3 The pathologist's report**

**The language of pathologist**

**Histotype, grading and staging**

**The report of pathology and the checklist**

**The pathology archive as a bank of tissue samples for treatment and research**

**The intraoperative examination**

**TOPIC4 The clinical pathological correlations**

**the role of autopsy over the years**

**gross evaluation of surgical specimen and correlation with clinical feature**

**gross evaluation of autopic organs and correlation with clinical features**