



## MEDICINE AND SURGERY

**Course: System diseases 2**

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

**Period: 2<sup>nd</sup> semester**

**Credits: 13**

### **Objectives**

#### **HEMATOLOGY COURSE**

This course is designed to guide medical students across the essential features of clinical and laboratory hematology and to achieve an understanding on the current knowledge of the blood disease processes in terms of pathophysiology and the underlying genetic and molecular abnormalities. Including also quick reminders of the basic sciences, this course will mainly focus on practical aspects and clinical cases, in particular with regard to diagnostic aspects, with the goal of facilitating the learning process and the retention of fundamental information in the field of hematology. Routine and specialized hematology tests will be discussed, with an emphasis on performing and interpreting test results. Theory will be applied for the evaluation, classification, diagnosis and monitoring of blood diseases. The course will start introducing the general principles of hematologic evaluation, specimen collection, and basic laboratory procedures, together with the origin and development of blood cell. The following lectures will first deal with the various disorders of erythrocyte production, function, and destruction. Nutritional anemia, membrane disorders, enzyme deficiencies, hemoglobinopathies and other disorders will be discussed, including laboratory detection methods, analyses, and diagnoses. A comprehensive look at lymphadenopathy, lymphoproliferative disorders and gammopathies will then be addressed, encompassing etiology, laboratory evaluation, diagnostic algorithms and clinical characteristics. Specific lectures will integrate the knowledge of lymphoproliferative disorders with basic concepts of pharmacology, pathology, advanced imaging techniques and radiotherapy. Coagulation disorders, including bleeding and thrombosis, will be also directed in the first half of the course. Thereafter, a comprehensive evaluation of acute and chronic leukemias (including myeloproliferative disorders, myelodysplastic syndromes, acute myeloid leukemia and acute lymphoblastic leukemias will be addressed. Clinical indications and complications associated to hematopoietic stem cell transplantation will be also discussed

#### **RESPIRATORY DISEASES COURSE OVERVIEW**

The lungs and the respiratory system are actually far more complex than many other organs and apparatus. The lungs must play multiple roles, gases exchanges, oxygen supplementation, removing of wastes, toxins, and defense against hostile intruders. Nowadays epidemiological data shows that the respiratory diseases are becoming more and more important in terms of morbidity, invalidity and mortality. Lung diseases are not only a killer but an impressive number of patients are now living worldwide with a chronic pulmonary disease with a terrific impact on hospitalization and general economic impact. Based on these data, the present course tries to focus on the most important aspects of respiratory medicine examining prevalence,



risk factors, physiopathological and clinical features of the most important chapters of lung diseases. For more complex diseases or clinical presentations, an integrated approach with other specialists (i.e.: radiologists, pathologists, pharmacologists, ENT...) will be used in order to describe in an accurate way the complexity and the heterogeneity of them.

## **Prerequisites**

To take *System diseases 2* exam *Mechanisms of diseases* and *Foundations for system diseases* exams must have been passed.

## **Contents**

### **HEMATOLOGY COURSE**

#### **Clinical Hematology**

- Approach to the patient with anemia
- Approach to the patient with a bleeding/thrombotic disorder
- Approach to the patient with "cytosis" (leucocytosis, erythrocytosis, thrombocytosis)
- Approach to the patient with myeloid malignancies (Bone Marrow Failures, Leukemia, Myelodysplastic syndromes, Myeloproliferative neoplasms, Therapy-related myeloid neoplasms)
- Approach to the patient with lymphadenopathy
- Approach to the patient with lymphocytosis
- Approach to the patient with splenomegaly
- Chronic Lymphocytic Leukemia
- Plasma Cell Disorders 1
- Plasma Cell Disorders 2
- Hodgkin Lymphoma
- Non-Hodgkin Lymphoma 1
- Non-Hodgkin Lymphoma 2
- Allogeneic and autologous stem cell transplantation
- Learning Objectives – Imaging
- Imaging in lymphoproliferative disorders: staging and evaluation of response

#### **Radiation hematology**

- Imaging in lymphoproliferative disorders: staging and evaluation of response
- Radiation hematology

#### **Pathology**

- Distinguish between lymphoma and leukemia.
- Illustrate how and why the classification of malignant lymphomas has evolved over time with emphasis on the Kiel, REAL and WHO classification.



- Compare and contrast the main morphological and clinical features of Hodgkin e non Hodgkin lymphomas.
- Become familiar with the most commonly encountered forms of lymphoid neoplasia and relative immunomarkers and genetic diagnostic abnormalities.
- Illustrate the indications and limitations of FNAB for the diagnosis of malignant and not malignant lymphadenopathy.
- Illustrate the most common not malignant lymphadenopathies which have to be distinguished from malignant lymphomas; illustrate the pathological basis of nodal tuberculosis, sarcoidosis, cat scratch disease, infectious mononucleosis, HIV infection

### **Pharmacology**

- Describe the general aspects of chemotherapy
- Illustrate pharmacological targets, dose considerations, combinations, resistance, side effects
- Describe main classes of chemotherapeutic drugs
- Discuss the classification and mechanism of action of the different classes of chemotherapeutic drugs
- Describe other anti-cancer drugs
- Illustrate general principles and examples of biological therapies, immunotherapy, hormonal therapy and targeted therapy

### **RESPIRATORY DISEASES COURSE**

#### **Respiratory Diseases Chronic Obstructive Pulmonary Disease (COPD)**

- Asthma
- Respiratory Allergies
- AIT-Allergen Immunotherapy
- Pulmonary Function Tests basis & interpretation
- Anaphylaxis & Drug Allergy
- Interstitial lung diseases
- Pneumonia
- OSAS and Sleep disorders
- Primary tumor of the Lung & Pleura
- Pleura effusion and pneumothorax
- ARDS & Respiratory failure
- Tuberculosis
- Cystic Fibrosis-Bronchiectasis
- Pulmonary Thromboembolic Disease
- Eosinophilic Pulmonary Diseases
- Cough
- Non pharmacological approach to lung and airway diseases
- Hot Topics in Pulmonary Disease

## **IMAGING**

The topics of the learning objectives will be addressed in specific lectures dedicated to imaging or in multidisciplinary lessons.

- Interstitial lung diseases
- Emphysema, cystic fibrosis and bronchiectasis
- Pulmonary thrombo-embolism
- Lung cancer

## **PATHOLOGY**

### **Inflammatory and interstitial lung diseases**

- Lung and pleural tumors

## **PHARMACOLOGY**

- Drugs used to treat Asthma and COPD
- Drugs used to treat Cystic Fibrosis
- Anti-tussive agents

## **Teaching Methods**

Lectures and multidisciplinary lessons

## **Verification of learning**

Written exam