

## SYLLABUS DEL CORSO

### Scienze di Laboratorio

2526-2-I0302D008

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#### Aims

Student's Skills:

- to recognise the role, limits and aims of laboratory analysis, variability causes and errors
- to describe instrument calibration, exam validation and quality controls execution
- To describe the plasma proteins study and diagnostic immunometry and enzymology
- to define the role of diagnostic tests in diabetes, in cardiovascular, thyroid, hepatic diseases, pregnancy and kidney lab monitoring
- to describe the physiopathology of primary haemostasis, of coagulation and fibrinolytic systems and inhibitors
- to list the drugs acting on haemostatic system and their mechanism of action
- to describe the role of haemostasis lab and illustrate pre-analytical, analytical features and related methods
- to describe the principles of coagulation tests. TAO lab monitoring
- to define ABO, Rh, and other systems and their lab study
- to describe anti-erythrocytes antibodies, methods used to detect them and clinical meaning
- to define methods for blood group assessment and for the search of anti-erythrocytes antibodies
- to describe the physiopathology of haemolytic disease of the newborn and of autoimmune anaemia
- to define the concept of transfusion medicine, and to describe adverse reactions and transfusion safeness

#### Contents

The goal of the course is to provide the knowledge about roles, limits and aims of laboratory tests, Good Laboratory Practise, variability and errors, quality control. Fundamentals of protein study, diagnostic enzymology and immunometry. Lab tests for the study of common pathologies (e.g. diabetes). Haemostasis and fibrinolysis physiopathology and related lab tests. Platelets, red blood cell pathologies, and their diagnostics. Transfusion medicine.

## Detailed program

- Lab tests: which, how and when
- Good Laboratory Practice, variability and errors
- Instrument calibration, exam validation and Quality Control execution
- Exam interpretation, reference range, Reference Change Value, cutoffs
- Diagnostic enzymology and immunometry
- Diabetes, Obesity e Cardio-vascular risk monitoring
- AMI diagnostics
- Thyroid, plasmatic protein, electrolytes, acid-base balance study
- Kidney physio-pathology: creatinine and GFR
- Urine exam and proteinuria
- CSF tests
- Hepatic Diagnostics
- Pregnancy lab monitoring
- Tumor markers
- Haemostasis lab: pre-analytical, analytical features and related methods.
- Coagulation tests. TAO lab monitoring.
- ABO, Rh, and other systems and their lab study. Anti-erythrocytes antibodies and clinical meaning.
- Methods for blood group assessment and for the search of anti-erythrocytes antibodies. Physiopathology of Haemolytic disease of the newborn and of autoimmune anaemia.
- Blood components: preparation, storage and monitoring
- Transfusion medicine, adverse reactions and transfusion safeness.

## Prerequisites

## Teaching form

All activities are conducted in presence:

16 (2-hour) lectures performed in erogative mode;  
12 (2-hour) exercises performed in erogative mode.

## Textbook and teaching resource

Teachers will provide educational material  
Spandrio L. Biochimica Clinica Ed Sorbona.  
Henry JB, et al. Clinical diagnosis and management by laboratory methods. Saunders Elsevier.  
Prencipe L. Approccio alla Chimica Clinica.

## Semester

First semester

## **Assessment method**

Written and oral exam.

- written test, aimed at evaluating candidate knowledge of the program of Diagnostic Hematology, consisting in 30 multiple choice questions. The score (or vote) will be the result of the right answers
- Oral interviews on the topics Laboratory Sciences, so as to assess the acquisition of knowledge related to the stages of the diagnostic process, the main techniques of clinical biochemistry analysis used in analytical laboratories, and the diagnostic strategies used to investigate the alterations in metabolic and organ processes most commonly evaluated by clinical biochemistry analysis. Each student is questioned individually, with a minimum of 4 questions, some of which are subject knowledge and others are reasoning questions.

The final assessment will take into account the results obtained in the different tests.

## **Office hours**

By appointment

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## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY

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