UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Clinical Biochemistry and Molecular Biology

2425-1-H4601D004-H4601D015M

Aims

CLINICAL BIOCHEMISTRY AND CLINICAL MOLECULAR BIOLOGY

Students' skills:

- to describe the role, the limitations and the aims of BC tests;
- to Explain the steps in the diagnostic procese
- to illustrate the causes of biological, analytical and post-analytical variability;
- to illustrate the meaning of quality control in BC;
- to describe the concept of analytical goal, reference intervals, desirable, decisional levels, sensibility, specificity and predictive value of BC tests;
- to illustrate the concept of function and lesion marker applied to hepatic and cardiac diagnostics;
- to describe the use of tumor markers;
- to describe the main lab tests used in the assessment of glucidic metabolism, plasmatic protein alterations, coagulopathies, hemoglobinopathies, and bone diseases.

Contents

CLINICAL BIOCHEMISTRY AND CLINICAL MOLECULAR BIOLOGY
The course aims to provide students with the basic knowledge of the diagnost process and ciclinical biochemistry tests to be used in the main organ/tissue alterations of relevance in dentistry.

Detailed program

CLINICAL BIOCHEMISTRY AND CLINICAL MOLECULAR BIOLOGY

Role, limitations and the aims of clinical biochemistry tests.
The Diagnostic Process: pre-analytical phase (pre-analytical variability), analytical phase (analytical variability) and biological variability, post-analytical phase (post-analytical variability) in Clinical Biochemistry.
Analytical goals and quality control in Clinical Biochemistry. How to interpret lab results: reference intervals, reference change value, decisional levels, sensibility, specificity and predictive value of BC tests.
Definition and characteristics of markers of function and injury (e.g., enzymes in diagnostics): detection window (time range) and early and late markers.
Clinical biochemistry of the liver: markers of damage, cholestasis, synthesis, and alcoholism.
Markers of myocardial infarction: from enzymes to troponins.
Clinical biochemistry of lipids and plasma lipoproteins: markers of cardiovascular risk.
Biochemical markers of neoplasia: marker classification, analytical problems and clinical use.
Exploration of glucose metabolism: diagnosis and surveillance of diabetes.
Clinical biochemistry of plasma proteins.
Hints of clinical biochemistry in blood diseases: hemoglobinopathies and coagulopathies.
Hints of clinical biochemistry of bone and mineral metabolism.

Prerequisites

Aims of Preparatory Sciences course.

Teaching form

All activities are conducted in presence:

- 5 2-hour lectures performed in erogative mode;
- 5 2-hour lectures conducted largely in erogative mode with interactive student involvement at the end of the explanation of specific concepts.

Textbook and teaching resource

Biochimica clinica e medicina di laboratorio a cura di: Ciaccio M, Lippi G. Ed Edises (3° ed. 2020)
Clinical Chemistry, by W.J Marshall et al. Ed. Elsevier-Mosby (9° ed. 2020)
Material and bibliographic references supplied by the professor

Semester

First year of course, second semester

Assessment method

Written test: 27 closed-ended tests (single/multiple answer divided among the three different modules) and final interview.
All students enter a written test followed by an oral interview. The written test consists of 27 multiple-choice quizzes, about 20 of which are single-answer and the rest are multiple-answer. Of these 27 questions, 7 cover the main topics of Clinical Biochemistry and Clinical Molecular Biology.

A time of one hour is set for the conduct of the written test. The student is admitted to take the oral if the score of the answers reaches a minimum score of 17. The oral examination (about 20 minutes for each candidate) is conducted on the same day after the correction of the written test.
The questions proposed in the written test are aimed at assessing understanding of the topics covered in class, with particular reference to the acquisition of knowledge related to the stages of the diagnostic process, and to the biochemical-clinical evaluation of cellular and organ metabolism alterations of major interest. In the oral test, taking cues from the written questions, the student is asked to explain/detail some of the answers given (from both wrong and correct answers given) in order to verify the correct interpretation of the question and the reasoning behind the answer.

Office hours

Reception upon appointment.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING