

# Clinical biology and pathology

**Lecturer**

Marie TRE-HARDY (Coordinator)

**Course mnemonic**

CHIM-G4311

**ECTS credits**

5 credits

**Language(s) of instruction**

English

**Course period**

First term

## Course content

The first part of the course is devoted to an introduction on clinical chemistry including basic definitions (immunoassays, antigens, haptens, antibodies, polyclonal antibodies, monoclonal antibodies). It also discusses the antigen / antibody reaction, the various immunoassay techniques and conditions (agglutination, precipitation, nephelometry, turbidimetry) as well as the marker immunoassays (competitive method and immunometric method, illustrated by diagrams). The advantages and disadvantages of each technique will be discussed. Other aspects will also be discussed such as the various antibodies used in immunoassays (the characteristics of a polyclonal serum, the production of antibodies, etc.), radioactive labeling, enzymatic markers and luminescent markers. The second part is devoted to clinical enzymology, which presents 1/4 of clinical biology analyzes in terms of diagnosis and follow-up. The main enzymes of clinical interest will be presented as well as enzymatic kinetics, and diagnostic enzymology (origins and causes of enzyme variations in plasma, choice of enzymatic marker, enzyme determination, clinical interpretation). The third part of the course deals with the medical applications of different assay techniques, including markers of renal and hepatic function, cardiac and phosphocalcium markers, major tumor markers and some examples of endocrine diseases. At each session, a clinical case will be presented illustrating the dosing techniques currently used in clinical biology laboratories and highlighting the diagnostic contribution of an analytical result. The last part focuses on quality assurance in the laboratory by introducing quality control principles and some notions of biostatistics (the various variables and their measurement - pre-analytical variation, analytical and biological variation).

## Objectives (and/or specific learning outcomes)

Give an overview of the place of clinical chemistry in the medical diagnosis and operating requirements of a clinical chemistry laboratory.

## Teaching method and learning activities

Ex cathedra courses

## References, bibliography and recommended reading

Carl A. Burtis, Edward R. Ashwood, Tietz Textbook of Clinical Chemistry, third edition, SAUNDERS 1999:265-356, Christopher P. Price, David J. Newman Principles and practice of immunoassay Macmillan, 1992 D. Wild The immunoassay handbook Nature Publishing Group 2001 X. Bossuyt, J.M. Boeynaems repères en diagnostic de laboratoire. Grant, 2011 Carl E. Speicher The rught test WB Saunders 1998 Danielle B. Freedman et al Challenges at the clinical interface AAC Press, 2001

## Other information

### Contact(s)

Marie Tré-Hardy  
Laboratoire LBS  
marie.tre-hardy@ulb.ac.be

## Evaluation method(s)

Other

### Determination of the mark (including the weighting of partial marks)

Oral presentation during the year of a dissertation on the dosage of a molecule of interest in clinical biology: 2 points  
Written exam on the whole course: 18 points  
Final score (/ 20 points): Oral presentation + Written examination.

### Main language(s) of evaluation

English and French

## Programmes

### Programmes proposing this course at the faculty of Medicine

MA-BIMED | Master in Biomedical Sciences | finalité Research/unit 1 and finalité Professional/unit 1

