



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Enzymes and Antibodies: From Theory To Practice

2223-3-I0302D025

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#### Aims

The course is aimed not only at acquisition of recent knowledge in the field of immunometry and clinical enzymology, but also at experience of these techniques directly by a focused laboratory training.

#### Contents

Enzymology and immunometry are the base of most laboratory tests. For this reason, the course will show the principles of innovative enzymatic- and immuno-assays in diagnostics and research.

#### Detailed program

Methodological approaches to clinical biochemistry. Enzyme-, immunometry-, and pcr-based assays; signal detection and amplification; different analytical formats; advantages and disadvantages; 1d and 2d electrophoresis; western blotting; protein arrays.

Practical training in laboratory:

1 - study of specific proteins in biological samples by antibodies: separation of proteins from biological samples by polyacrylamide gel electrophoresis (SDS-PAGE), transfer of proteins from gel to filter (Western Blotting), immunodecoration with specific antibodies for identification and quantification of proteins of interest, detection of the signal coming from the protein of interest by chemiluminescence assay, image acquisition by a CCD camera;

2 - use of enzymes in diagnostics: use of the spectrophotometer to study the absorption spectrum of optically active substances (NAD<sup>+</sup> and NADH/H<sup>+</sup>); measurement of the concentration of an optically active substance

(NADH/H<sup>+</sup>) by Lambert&Beer law and the molar extinction coefficient; measurement of the concentration of lactic dehydrogenase enzyme in serum samples, evaluating the variation of NADH/H<sup>+</sup> concentration in time (kinetic mode). Enzymatic measurement of a substrate: glucose assay by colorimetric method (Glucose Oxidase Horseradish Peroxidase) using the spectrophotometer.

## **Prerequisites**

3rd year of the Course in Biomedical Laboratory Techniques

## **Teaching form**

In the Covid-19 emergency period the lessons will be performed in mixed modality:

- video recorded synchronous lessons
- laboratory training organized for groups of a few students

## **Textbook and teaching resource**

Material and bibliographic references supplied by the professor

## **Semester**

First semester

## **Assessment method**

Attendance

## **Office hours**

On appointment requested by mail to [francesca.raimondo@unimib.it](mailto:francesca.raimondo@unimib.it)

## **Sustainable Development Goals**

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

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