



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Introduction To Laboratory Techniques

2122-2-E1301Q079

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#### Aims

The aim of this course is to offer basic knowledge of the most common techniques of recombinant DNA and biochemistry. The course also aims to develop a critical sense in the choice of strategies for DNA cloning, production of recombinant proteins, purification of proteins, methods for quantification of proteins and enzymatic activity.

Knowledge and understanding - at the end of the course, students will know the theory underlying main biochemical laboratory techniques and basic techniques for the manipulation of recombinant DNA.

Ability to apply knowledge and understanding - at the end of the course students will be able to apply the knowledge acquired in choosing experimental approaches for DNA cloning, production, purification and characterization of proteins. This knowledge will also be applied in subsequent courses, in particular in practical course of integrated biology (Laboratorio integrato di biologia – LIB).

Autonomy of judgment - at the end of the course, students will be able to develop a protocol for cloning of plasmidic DNA, production of recombinant protein, protein purification and characterization.

Communication skills - at the end of the course, students are expected to acquire and to use adequate scientific terminology.

Learning skills - at the end of the course, students are expected to understand and critically evaluate the use of the methodologies reported in the scientific literature.

#### Contents

1. Recombinant DNA methods for cloning and production of recombinant proteins
2. Preparative techniques for protein extraction and enrichment

3. Techniques for assaying protein and enzyme activity
4. Preparative techniques for protein purification
5. Electrophoretic and immunochemistry techniques
6. Biophysical techniques for conformational analysis of proteins

## Detailed program

### 1. Recombinant DNA methods for cloning and production of recombinant proteins. \_\_\_\_\_

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## Prerequisites

Knowledge of basic concepts of physics and general and organic chemistry is required. Most relevant physicochemical principles and biochemistry concepts will be briefly stated or recalled at the beginning of class.

## Teaching form

Classroom lectures based on powerpoint presentations; videos; discussion of experimental data.

## Textbook and teaching resource

PPT slides, published on the Moodle website (<http://elearning.unimib.it/>).

Textbooks:

- K. Wilson & J. Walker (2010). Principles and Techniques of Biochemistry and Molecular Biology.

- M. C. Bonaccorsi di Patti, R. Contestabile, M. L. Di Salvo "Metodologie Biochimiche" Casa Editrice Ambrosiana, 2012

## Semester

First semester

## **Assessment method**

Written + oral exam. \_\_\_\_\_

## **Office hours**

On demand, by mail to [stefania.brocca@unimib.it](mailto:stefania.brocca@unimib.it)

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