UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Biology

**2627-1-H4103D154**

## Aims

The course will provide the essential theoretical knowledge of biology and genetics, also focusing on the possible future application in the medical field. The subjects of the course will provide the necessary knowledge to understand the vital processes, as well as the laws of heredity and the processes involved in the generation of phenotypic diversity.

## Contents

Bases of biological organization; Information flow; Molecular bases of the expression and regulation of gene information, with analysis of epigenetic, transcriptional and post-transcriptional mechanisms; Genomics and Transcriptomics; Cellular function and intracellular trafficking; Reproduction, cell cycle and control mechanisms; Mechanisms that can generate phenotypic variants in humans; General genetics; Human genetics; Organization and structure of chromosomes; the techniques of cytogenetics and molecular cytogenetic; Numerical and structural chromosomal aberrations; Consequences of chromosomal abnormalities on human health and genetic diseases and their diagnosis in prenatal and postnatal context; Cytogenetics of Cancer: Role of chromosomal abnormalities in development and progression in oncology; Methodologies in the genomic and post-genomic field and their applications in the medical field.

## Detailed program

See the program reported for the individual modules

## Prerequisites

Basic sciences (chemistry, physics)

## Teaching form

## Textbook and teaching resource

-G. De Leo, E. Ginelli, S. Fasano. BIOLOGIA E GENETICA, EdiSES, IV Ed 2020
-E.Ginelli, M.Malcovati. MOLECOLE, CELLULE E ORGANISMI, EdiSES, II Ed 2022
-H. Lodish, A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. MOLECULAR CELL BIOLOGY, FREEMAN, 2021.
-Strachan. GENETICA MOLECOLARE UMANA, Zanichelli, 2021
-P.J. Russell. GENETICA UN APPROCCIO MOLECOLARE. PEARSON, 2019
Others:
The slides employed in the classes will be provided to the students

## Semester

## Assessment method

The final exam will be written with a mandatory oral component.
Specifically, the written part will be a multiple-choice test consisting of 20 questions that will allow for a general assessment of the knowledge acquired by the student. This test will not provide a score but will allow access to the oral exam (threshold for passing to the oral exam is 14 correct answers out of 20).
The oral exam will consist of an interview on the topics covered in class and the exam texts and will allow for a more in-depth evaluation of the acquired knowledge, as well as the critical ability and the ability to place individual topics within a broader context (for example, by evaluating possible interactions).

## Office hours

By appointment (raffaella.meneveri@unimib.it)

## Sustainable Development Goals

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