



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Biologia e Genetica

1718-1-H4101D004

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#### Aims

Structure and function of the most important cellular macromolecules; DNA duplication and repair mechanisms; transcription and RNA processing; translation and protein sorting; molecular and cellular mechanisms responsible for gene expression and its regulation, analyzing epigenetic mechanisms, transcriptional and post-transcriptional regulation; signal transduction pathways; molecular and cellular mechanisms which control the cell cycle, cellular growth and differentiation as well as cell-to-cell interactions; basic concepts of heredity and the transmission patterns of inherited traits; mechanisms which can generate phenotypic variants in men; methodologies used in genetic analysis; most important biotechnological applications in medicine (gene-based and cell-based therapy).

#### Contents

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, both on the cellular and molecular level, as well as the laws of heredity and the processes involved in the generation of phenotypic diversity. The acquired knowledge will contribute to better understand the processes involved in normal and pathological situations.

#### Detailed program

#### Prerequisites

#### Teaching form

Lectures, informal teaching

## **Textbook and teaching resource**

G. De Leo, E. Ginelli, S. Fasano. BIOLOGIA E GENETICA, EdiSES, 2013

other textbooks:

E.Ginelli, M.Malcovati. MOLECOLE, CELLULE E ORGANISMI, EdiSES, 2016

H. Lodish, A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. MOLECULAR CELL BIOLOGY,

FREEMAN, 2016.

Strachan. GENETICA MOLECOLARE UMANA, Zanichelli, 2014

P.J. Russell. GENETICA UN APPROCCIO MOLECOLARE. PEARSON, 2014.

## **Semester**

second semester

## **Assessment method**

written (multiple choices and short answers) and oral exam

## **Office hours**

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