



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Biologia Generale

2223-1-H4601D066-H4601D089M

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#### Aims

##### GENERAL BIOLOGY

Knowledge of the main concepts in the structure and function of prokaryotic cells, eukaryotic and viruses, as well as laws governing the variability and inheritance.

#### Contents

##### GENERALBIOLOGY

Cell theory: principles of classification of living organisms, structure and organization of prokaryotic and eukaryotic cells, viruses, genes, structural differences between prokaryotic and eukaryotic genes, genome organization in prokaryotes and eukaryotes; characteristics of the human genome, variability and inheritance; the laws of Mendel and integrations.

#### Detailed program

##### GENERALBIOLOGY

Cell theory: principles of classification of living organisms, structure and organization of prokaryotic and eukaryotic cells, viruses, genes, structural differences between prokaryotic and eukaryotic genes, genome organization in prokaryotes and eukaryotes; characteristics of the human genome, variability and inheritance; the laws of Mendel and integrations.

Human reproduction - Genetic variability – Inheritance – Genes: genotype and phenotype – Diploidy and reproduction. Homologous chromosomes, alleles and loci, homozygosity and heterozygosity – Mendel's laws – Alleles: wild-type, mutated and multiple ones, dominance and recessivity – Mendel's law's implementation:

epistasis, penetrance and expressivity – Sex chromosomes. Sex determination – Chromosome X inactivation. Its implication in the phenotypic manifestations of genetic diseases – Crossing over and its genetic consequences Principles and consequences of mitochondrial inheritance and genomic imprinting – Examples of monogenic inheritance: blood groups (AB0, Rh), color blindness –

## **Prerequisites**

Aims of the course Scienze Propedeutiche

## **Teaching form**

Frontal lectures

## **Textbook and teaching resource**

Main Textbook

G. De Leo, E. Ginelli, S. Fasano. *Biologia e Genetica* EdISES, 2013

More Resources

- H. Lodish, A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. *Molecular cell biology*, Ed. FREEMAN, 6° ed. 2007.

- G. Karp. *Biologia cellulare e molecolare* 3° ed EDISES, 2007

- Strachan. *Human molecular genetics*, 4° Ed. GARLAND SCIENCE, 2010

- P.J. Russell. *Genetica*. 2° ed EDISES, 2007

- B. A. Pierce. *Genetica*. ZANICHELLI, 2005.

PPT slides from frontal lectures

## **Semester**

2° semester

## **Assessment method**

One exam for all three sections of the course. Written test multiple choices (around 30) and 2-3 open short questions on all three modules. The examination is intended to test students' knowledge acquired in the different modules of the course.

## **Office hours**

On appointment

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING

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