

# UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

# **COURSE SYLLABUS**

# **General Biology**

1920-1-H4601D066-H4601D089M

#### **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. Honologous 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 phenotipic manifestations of genetic diseases - Crossing over and its genetic consequences Principles and consequences of mytochondial 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.

#### Semester

2° semester

#### **Assessment method**

One exam for all three sections of the course. Written test multiple choices (around30) and 2-3 open shorts 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