

## COURSE SYLLABUS

### Biology

2627-1-I0305D001-I0305D00103

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#### Aims

The student will learn:

- the function of the main macromolecules of the cell;
- the structure of the cell membrane and its role in transport and communication;
- structure and function of the cytoskeleton;
- the molecular and cellular basis of gene expression and regulation;
- the cellular and molecular mechanisms that control cell division, differentiation, proliferation and cell-cell interaction;
- the basis and laws of the transmission of hereditary characteristics;
- the mechanisms determining the onset of human phenotypic variants.

#### Contents

The course aims to provide the student with the knowledge of the structure and function of pro/eukaryotic cells, thanks to the tools provided by the integration of the most current and advanced concepts of molecular and cellular biology.

#### Detailed program

- Structure and organization of the eukaryotic and prokaryotic cells.
- Structure and function of proteins and nucleic acids.
- DNA replication and mechanisms of DNA repair.
- Chromatin structure and the organization of the human genome.

- Organization of the eukaryotic genes.
- RNA transcription.
- Genetic code and protein synthesis.
- Regulation of gene expression.
- Signal transduction.
- Cell cycle and cell cycle regulation.
- Mitosis and Meiosis.
- Mendel's laws.
- DNA mutations and polymorphisms.

## **Prerequisites**

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## **Teaching form**

Lectures.

## **Textbook and teaching resource**

Solomon, Berg, Martin. Elementi di Biologia. EdiSES

Bonaldo, Duga, Pierantoni, Riva, Romanelli. EdiSES

## **Semester**

First semester

## **Assessment method**

The student will have to answer 15 quizzes (Multiple choice test) concerning the topics of Biology.

## **Office hours**

By appointment required by mail

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING

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