DIM-SAP-239 Principles of Molecular Cell Biology and Biotechnology

**SEMINAR:** Spring
**CREDITS:** 7.5 ECTS (Theory 2 hrs. during 10 weeks and 5 hrs. per week during 5 weeks; Laboratory 3 hrs. per week during 10 weeks)
**LANGUAGE:** English
**DEGREES:** SAPIENS program

**Course overview**
This course deals with the biology of cells of higher organisms, their structure and function; and processes operating in cells, such as transcription, protein biogenesis, cell adhesion, cell proliferation, cell communication and differentiation. Experimentation with eukaryotic cells, as well as biology data analysis and introduction to scientific communication are also introduced.

**Prerequisites**
Previous knowledge on biology is advisable but not mandatory.

**Course contents**
**Theory:**
Lectures are divided into four main parts:

1. Introduction: eukaryote cells: organization, components, genetic information and research tools.

**Laboratory:**
Practical sessions include the following topics:

Lab1. Methods of imaging
Lab2. Genetic information and its transmission: DNA and mitosis

This document is a brief outline of the course and does not replace the official program of study

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Lab3. Biochemistry of protein folding
Part II: Photosynthesis.
Lab5. Introduction to tissue culture
Lab6 – 9 Introduction to mammal’s cell culture and experimentation. Proliferation and apoptosis. Wound healing assay. Differentiation assay. Protein extraction from cell culture.

Textbook

Other sources:
- Histology and Cell Biology: An Introduction to Pathology, 4th Edition. Author: Kierszenbaum A.

Grading

To pass the course is necessary to achieve an overall grade of at least 5 over 10.

The overall grade is obtained as follows:

- Mid-term 1: 15%
- Mid-term 2: 15%
- Laboratory: 30%.
- Team research work: 15%
- Final exam: 25%

If the student fails the course, he or she can take a second examination to pass the subject and must achieve at least 6 over 10 to gain a pass overall.