

MSc in Bioinformatics for Health Sciences

IBM. Introduction to Biomedicine

Syllabus Information

Academic Course: 2017/18

Academic Center: 804 - Official Postgraduate Programme in Biomedicine

Study: 8045 – Bioinformatics for Health Sciences - MSc

Subject: 30996 – IBM. Introduction to Biomedicine

Credits: 5.0

Course: 1st

Teaching languages: English

Teachers: Berta Alsina, David Comas

Teaching Period: 1st term

Presentation

This course will introduce the students to the basic principles of genetics, cell biology, molecular biology and main physiological processes. For the students with little background in biology, the course will cover the structural components of the cells, basic principles of cellular function: transport, metabolism, signalling, the main molecules that mediate these processes and how tissues are organized and can lead to diseases.

The course will be based on introductory lectures and seminars that will provide the students the basic knowledge in biology and will situate them into the state of the art in biomedical research. Seminars from published articles will be presented by the students and they will be encouraged to discuss and participate in problem solving in groups.

Associated skills

General competences:

- 1) To develop skills in acquisition, critical processing, and communication of scientific information, and proposal and discussion of hypothesis.
- 2) To acquire basic knowledge to understand the experimental approaches developed in the biomedical research.

Specific competences:

- 1) To acquire basic knowledge on genetics, cell biology, biochemistry, development, evolution and epidemiology.
- 2) To be able to understand and discuss in a critical way basic papers on biological research.

Learning outcomes

The goal of the subject is to provide the students the basic concepts and skills to be able to understand and evaluate topics in more specific fields within Biomedicine.

Prerequisites

The subject is oriented towards students without deep knowledge of Biology or related fields.

Contents

- 1) Genes and genomes. Genome structure in the tree of life and transcription and transduction factors in different organisms.
- 2) Cell structure and function. Tissue and organ organization. Cell signaling.
- 3) Metabolism and energetic flow in the cells.
- 4) Physiology and disease

Teaching methods

The course will be divided into topics of current active research in different aspects of biology and biomedical research.

Approach and general organization of the subject:

The format and distribution of the classes will be: a) lectures will be used to present an overview of current topics (80%); and b) session of article discussion and problem solving (20%).

Training activities

Theoretical classes with study sessions for complementing material, written essays and oral presentation

Evaluation

There will be a final exam that will consist on a written test with questions about the lectures and articles presented the course. It will also include two essays of commentary of representative biology advances. In addition, an oral presentation will be given by the students discussing a selected paper (provided by teachers).

Grading system : 1-10

1. Written exam (40% of the total grade).
2. Oral presentation (30% of the total grade)
3. Assays (30% of the total grade)

To pass, it is necessary to achieve at least 6/10 in the written test.