האוניברסיטה העברית בירושלים THE HEBREW UNIVERSITY OF JERUSALEM



# The Hebrew University of Jerusalem

Syllabus

## 21st Century Biology - Selected Topics A - 76559

Last update 13-10-2024

HU Credits: 2

Degree/Cycle: 1st degree (Bachelor)

**Responsible Department:** Computer Science & Computational Biology

Academic year: 0

Semester: 1st Semester

<u>Teaching Languages:</u> Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof. Michal Linial

Coordinator Email: michall@cc.huji.ac.il

Coordinator Office Hours: arranged by email

Teaching Staff:

Prof. Michal Linial

#### Course/Module description:

The class is geared towards young [1st year] students of Computational Biology (#532). Open to a few students from ETGAR (Life Sciences). The class deals with several concepts of quantitative thinking and an introduction of the commonality of the scientific methodologies in biology and computer science

#### Course/Module aims:

*(i) Introducing conceptual mode of thinking, combing computation and biological perspectives* 

(ii) Introducing interdisciplinary research

*(iii)Introducing technological breakthroughs and their impact on modern biology and human health* 

Learning outcomes - On successful completion of this module, students should be able to:

1. How to formulate a scientific quantitative question

2. To acquire the topic of scaling and unit transformation in science

3. Formulate a legitimate hypothesis and select a preferred direction to address it

*4. To get familiarized with genetic, molecular and concepts in experimental sciences.* 

Attendance requirements(%):

In all classes

Teaching arrangement and method of instruction: Presentation, Discussions and homework.

### Course/Module Content:

The class is divided into two sections: 1 – A brief history on the human genome project, including technological breakthroughs and molecular definitions

2 - Introducing concepts and their integration such as:
molecular communication
cell communication
scaling

♣recognition♣identity♣redundancy

<u>Required Reading:</u> will be provided along the class for discussion issues for the next class

<u>Additional Reading Material:</u> None

Grading Scheme:

Active Participation / Team Assignment 5 % Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 90 % Other 5 %

Additional information:

Active participation in the discussion is a critical component of the teaching scheme Homework will be given in English (the report can be of course in Hebrew)

A mandatory weekly homework which will be graded.