

The Hebrew University of Jerusalem

Syllabus

Mathematics for Bio Medical Sciences - 94110

Last update 28-07-2021

<u>HU Credits:</u> 3

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Bio-Medical Sciences

<u>Academic year:</u> 0

<u>Semester:</u> 1st Semester

<u>Teaching Languages:</u> Hebrew

<u>Campus:</u> Ein Karem

<u>Course/Module Coordinator:</u> Danny Ben-Zvi

Coordinator Email: danny.ben-zvi@mail.huji.ac.il

<u>Coordinator Office Hours:</u> on demand

Teaching Staff:

Dr. Dan Ben Zvi, Mr. Yorai Ron, Mr. Tuvel Kolman, Ms. Zahala Bar-On

Course/Module description:

An introduction to differential and integral calculus and linear algebra, and their applications in biology and medicine

Course/Module aims:

To promote mathematical thinking and provide basic concepts in mathematics by studying problems in biology and medicine.

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

The students will learn:

1. To write and solve simple differential equations and analyze simple mathematical models based on differential equations.

- 2. To add and multiply matrices
- *3.* To switch bases in vector spaces and define subscpaces
- 4. To understand the algorithm underlying principal component analysis

<u>Attendance requirements(%):</u> recommended

Teaching arrangement and method of instruction: frontal, using the board. Class and TA

Course/Module Content:

Mathematical models in biology – differential and integral calculus Mathematical formulation of experimental data – matrices, vectors, vector spaces and subspaces, bases Dimensionality reduction - PCA

Required Reading:

No required teaching materials. We will use the "open university"'s Algebra books occasionally.

Additional Reading Material:

<u>Course/Module evaluation:</u> End of year written/oral examination 60 % Presentation 0 % Participation in Tutorials 0 % Project work 0 % Assignments 20 % Reports 0 % Research project 0 % Quizzes 20 % Other 0 %

Additional information: