# The Hebrew University of Jerusalem

## Syllabus

# Mathematics for Medical Sciences - 96133

*Last update 28-07-2021*

*HU Credits:* 5.5

*Degree/Cycle:* 1st degree (Bachelor)

*Responsible Department:* Medicine

*Academic year:* 0

*Semester:* 1st Semester

*Teaching Languages:* Hebrew

*Campus:* E. Safra Ein Karem

*Course/Module Coordinator:* Dr. Dan Ben Zvi

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

*Coordinator Office Hours:*

*Teaching Staff:*

*Dr. Dan Ben Zvi,*
*Dr. Moran Yassour,*
*Mr. Ziv Titam-Regev,*
*Ms. yhara arad*

*Course/Module description:*
*An introduction to differential and integral calculus, linear algebra, and graph theory - 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.*
*5. To understand basic concepts in graph theory and algorithms*

*Attendance requirements(%):*

*Teaching arrangement and method of instruction: 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*
*Combinatorics, Graph algorithms*

*Required Reading:*
*none*

*Additional Reading Material:*

*Course/Module evaluation:*
*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:*