האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Math and Programming for Bio Medical Sciences - 94110

Last update 07-08-2022

HU Credits: *5*

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

Responsible Department: *Bio-Medical Sciences*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *Hebrew*

Campus: *Ein Karem*

Course/Module Coordinator: *Danny Ben-Zvi*

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

Coordinator Office Hours: *on demand*

Teaching Staff:
Dr. Dan Ben Zvi,
Mr. Yorai Ron,
Ms. Zahala Bar-On,
Mr. Arata Hayashi,
Mr. Tuvel Kolman,
Ms. Joyce Kamar,
Ms. Hadasa Kaufman

Course/Module description:
The course provides basic tools in programming in R and applied math for biomedical studies.

Course/Module aims:
The course provides basic tools in programming in R and applied math for biomedical studies.

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 read and write basic code in R
6. To apply mathematic and statistical concepts in R.

Attendance requirements(%):
recommended

Teaching arrangement and method of instruction: Math - teaching on the white board, exercises with pen & paper and using code.
Programming - online courses with help from TAs, exercises.

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
Programming in R - basic coding and applying code to analyse models and data

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

Additional Reading Material:

Course/Module evaluation:
End of year written/oral examination 60 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 30 %
Reports 0 %
Research project 0 %
Quizzes 10 %
Other 0 %

Additional information: