

The Hebrew University of Jerusalem

Syllabus

Bioinformatics: Basic Sequence Analysis Tools - 94665

Last update 10-07-2018

<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

Course/Module Coordinator: Tamar Kahan

Coordinator Email: tamar.kahan@huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Dr. Tamar Kahan Prof Itamar Simon Prof Ora Furman-Schueler Ms. Britny Blumenfeld Mr. Mr. Maxim Mogilevsky

Course/Module description:

The course is based on lectures with demonstration and hands-on practice by the students. The students are introduced to relevant bioinformatics databases and common sequence analysis tools.

Course/Module aims:

Provide students with skills to use biological molecule sequence databases and analysis tools, and tools to assess their quality.

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

Conduct research of DNA, RNA and protein sequences; use tools for comparison and characterization of sequences; identify functional domains and predict the structure of molecules; explore the genomic context of genes; basic analysis of gene expression using databases of expression profiles.

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures and exercises with live demonstrations and hands-on practice.

Course/Module Content:

• Common sequence and knowledge databases and a mechanism for assessing their quality

• Algorithms and tools for DNA and protein pairwise and multiple sequence alignment

• Searching text and sequence databases

• Sequence motifs and databases: tools for sequence analysis and classification; tools for de novo definition of motifs.

- Protein structure visualization and prediction
- Genomic databases and genome browsers
- NGS and microarray sequence databases and common analysis tools for

expression profiling

<u>Required Reading:</u> None

Additional Reading Material:

<u>Course/Module evaluation:</u> End of year written/oral examination 0 % Presentation 0 % Participation in Tutorials 0 % Project work 0 % Assignments 20 % Reports 0 % Research project 70 % Quizzes 10 % Other 0 %

<u>Additional information:</u> All exercises and lectures take place at a PC classroom. Students get hands-on experience.