



The Hebrew University of Jerusalem

Syllabus

Bioinformatics: Basic Sequence Analysis Tools - 94665

Last update 10-07-2018

HU Credits: 3

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: 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

Required Reading:

None

Additional Reading Material:

Course/Module evaluation:

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 %

Additional information:

*All exercises and lectures take place at a PC classroom.
Students get hands-on experience.*