Department: Mathematics and Computer Sciences
Division: Computer Sciences
Level and Major: Graduate

Course Title: Introduction to Bioinformatics
Number of Credits: 3
Prerequisite: Cellular and Molecular Biology
Lecturer:

Course Description:

Course Goals and Objectives:

Course Topics:

- Application of bioinformatics in industry and medicine
- Alignment of pairs of sequences
- Multiple sequence alignment
- Working with software and alignment servers
- Introduction of various methods of structure prediction
- RNA Prediction of RNA secondary structure
- Working with RNA structure prediction software and servers
- phylogenetic tree prediction
- Working with phylogenetic tree prediction software and servers
- Introduction of biological databases
- Database search for similar sequences
- Working with biological databases
- Gene Prediction
- Working with Gene prediction software and servers
- Introduction of various classification methods
- Protein classification and structure prediction
- Working with Protein structure prediction software and servers
- Genome analysis
- Working with Genome analysis software and servers
- Application of bioinformatics in identifying specific diseases such as cancer, autism and hyperactivity, etc.

Reading Resources:

- David W. Mount, Bioinformatics: Sequence and Genome Analysis, 2nd edition, Cold Spring, Harbor Laboratory, 2004, ISBN 0-87969-687-7.
- Neil C. Jones and Pavel A. Pevzner, An Introduction to Bioinformatics Algorithms, MIT Press,2004SBN: 0-262-10106-8

Evaluation: