Anno Accademico
2014/2015

Corso di Laurea Magistrale in
BIOLOGIA

Insegnamento
ADVANCED TOPICS IN BIOINFORMATICS

Docente
Fulvio D'Angelo

Programme

Sequence Alignment
- Dynamic programming
- Heuristic algorithms (BLAST, FASTA)
- Substitution matrices (PAM, BLOSUM)
- Multiple sequence alignment (ClustalW)

Biological Databases
- Nucleotide databanks (EMBL, NCBI, DDBJ)
- Genome browsers (Ensembl, UCSC)
- Protein databases (PDB, UniProt)

Next-generation Sequencing
- New technologies and their applications
- DNA-seq data assembly
- RNA-seq data mapping

Functional Genomics
- Clustering algorithms
- Gene expression analysis (using RNAseq data)
  Gene set enrichment analysis (GO, GSEA)

Educational materials

- Marketa Zvelebil, Jeremy Baum *Understanding Bioinformatics* (2007, Garland Science, ISBN: 978-0815340249)

- Richard C. Deonier, Simon Tavaré, Michael S.Waterman *Computational Genome Analysis: An Introduction* (2005, Springer, ISBN: 978-0387987859)

- Recommended scientific articles

- Lecture notes available online at http://www.ecampus.unisannio.it