Bioinformatics

Monica Bianchini

Department of Information Engineering and Mathematics
E–mail: monica.bianchini@unisi.it
Phone: 0577 235871
Mobile: 320 4355875

Students' assistance:

- Wednesday, from 10.00 to 12.00, room 120
- By appointment, agreed in advance via email

Course program

- Main topics
  - Molecular biology and biochemistry
  - Biological database searching and pairwise alignments
  - Substitution patterns
  - Distance–based phylogenetic methods
  - Character–based phylogenetic methods
  - Genomics and gene recognition
  - Prediction of protein and RNA structures
  - Proteomics
  - Machine learning tools for bioinformatics
- Seminars from academic and industry experts

Textbooks

+ Dan E. Krane, Michael L. Raymer, Fundamental Concepts of Bioinformatics, Benjamin–Cummings Pub. Co.

+ Arthur M. Lesk, An Introduction to Bioinformatics, Oxford Press, 4th ed.

+ Slides, freely downloadable at

www.diism.unisi.it/~monica/bioinfo.html

Exam

- Practical exam – choose one of the two options:
  - Use of machine learning tools for biological data processing (based on existing software)
    - Team work
    - Discussion of the obtained results during the oral exam
  - Preparation of a small presentation based on the reading of some scientific papers
- Oral exam on the whole contents of the lectures

Collaborations

- Department of Biotechnology, Chemistry and Pharmacy, University of Siena
- Department of Medical Biotechnologies, University of Siena
- Department of Medicine, Surgery and Neuroscience, University of Siena
- Toscana Life Sciences
- Experimental and Clinical Medicine, University of Florence
- Microbiology and Virology Laboratory, Careggi University Hospital of Florence
- Department of Chemistry and Applied Biosciences, ETH Zürich
- Radboud University Medical Center, Nijmegen, The Netherlands
- GSK Vaccines (Siena)
- Philogen/Philochem (Siena/Zürich)
- bioMérieux (Florence)