



## Bioinformatics for non-bioinformaticians (4h)

**Workshop for employees, post-docs and students of universities and research units and high school students on the example of data from medicine, health sciences and physical education.**

The aim of the workshop is to introduce participants to the basics of bioinformatics and enable them to understand and use the tools and methods used in the field, despite their lack of prior experience in programming or analyzing biological data.

1. What are bioinformatics and their importance in modern biology
2. Biological databases
  - List and show examples
  - Primary databases
  - Secondary databases
  - Specialized databases
3. Basics of DNA sequencing
  - Overview of techniques (Sanger, NGS)
  - Explanation of sequence similarity detection tools (BLAST, FASTA)
  - Practical exercises
4. Genome analysis
  - Discussion of the structure of genomes
  - Examples of genomic analyzes (gene identification, gene function prediction)
  - Use of genome analysis tools (NCBI Genome Browser, Ensembl)
5. Protein structure analysis
  - Introduction to protein structure
  - Discussion of methods for predicting protein structure
  - Protein structure modeling programs (SWISS-MODEL)
6. Functional annotation of genes (Gene Ontology)

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### Teaching methods:

Hands-on workshop at a computer; bioinformatics software available through a web browser.

### Outcomes for participants:

- **Basic knowledge of bioinformatics methods.**
- **Understanding the potential applications of bioinformatics methods in biology and medicine.**
- **Acquiring the ability to operate basic bioinformatics tools that do not require programming skills.**

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### Duration:

4 hours

### Requirements:

Basic computer knowledge

### Conditions of participation:

Filling out the application form

### Applications:

[Enroll](#)

### Contact:

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### Organizer:

Department of Computer Sciences and Statistics (KZIS)  
& University Centre for Sports and Medical Studies (UCSMS)  
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Poland " funded within the " Science for Society" program