Course name: Bioinformatics (USOS Code: B-BMOL.012)

ECTS: 5

No. of hours: 60 (0 lectures + 60 classes)

Course coordinator: Dr hab. Michał Kalita; Dr Piotr Koper; Dr Przemysław Grela

Prerequisites: Basic computer skills, completed courses of genetics, molecular biology or equivalent courses.

Course description: During the course, the student will learn what is the working area of bioinformatics. Issues related to biological primary and secondary databases and their resources, structure and formats of sequence records, searching and retrieving records from databases will be discussed. The basic tool for searching of sequence databases (FASTA, BLAST), pairwise and multiple sequence alignment algorithms and their optimization will be shown. Basics of DNA sequence analysis: searching for motifs, patterns, open reading frames, genes, promoters as well as examples of tools for molecular phylogenetic will be provided. Moreover issues of protein sequence analyses: functional domain searching, examples molecular modeling of proteins and their interactions will be addressed.

Recommended literature: Xiong, J. Essential Bioinformatics. (Cambridge University Press, 2006), Mount, D. W. Bioinformatics: sequence and genome analysis. (Cold Spring Harbor Laboratory Press, 2004), Lesk, A. M. Introduction to bioinformatics. (Oxford University Press, 2014).