

Module name	<b>Basics of bioinformatics</b>
Module code	B-BT.026
ISCED code	0511: Biology
Study cycle	I <sup>o</sup>
Semester	Winter
Responsible for this module	Dr Przemysław Grela, Department of Molecular Biology, przemek@hektor.umcs.lublin.pl Dr Michał Kalita, Department of Genetics and Microbiology, michal.kalita@umcs.pl
Language of instruction	English
Website	
Prerequisites	Basic knowledge of genetics and biochemistry
ECTS	2
ECTS points hour equivalents	Contact hours (work with an academic teacher) – 20 - computer labs: 20  Non-contact hours (students' own work) – 30 - preparation for the exam: 10 - preparation for labs: 5 - preparation of reports from laboratory exercises: 10 - literature study: 5  <b>Total number of ECTS points for the module - 2</b>
Learning outcomes verification methods	Continuous evaluation of the computer classes, reports from computer laboratories, written examination
Course full description	List of topics discussed in the classes: Introduction to nucleotide sequence and protein databases. Retrieving DNA/protein sequences from databases. Pairwise and multiple sequence alignment. Finding patterns in DNA/protein sequences. Computational methods for study of biological sequence data in comparative biology and evolution. Basics of protein structure and methods of structure determination will be presented as well as the software for visualizing 3D structures of proteins. Methods for secondary and tertiary protein structure prediction will be discussed as well as methods for modeling small/molecule-protein interactions and protein-protein interactions.
Bibliography	1. Baxevanis, A.D., Ouellette, B.F.F. Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins. (2004) Wiley-Interscience 2. Higgs P.G., Attwood T.K. Bioinformatics and Molecular Evolution (2005) Wiley-Blackwell 3. Jin Xiong, Essential Bioinformatics (2006) Cambridge University Press
Learning outcomes	<b>KNOWLEDGE</b> W1: Student knows and understands professional terms and terminology used in bioinformatics W2: Student knows and understands the theory and statistical background of commonly available

	<p>bioinformatics tools</p> <p>W3: Student knows and understands the advantages and disadvantages of different techniques used in bioinformatics</p> <p><b>SKILLS</b></p> <p>U1: Student is able to use well-established and widely used bioinformatics tools and platforms</p> <p>U2: Student is able to navigate through internet-based biological databases</p> <p>U3: Student is able to manipulate DNA and protein sequences using stand-alone PC programs and online tools</p> <p><b>SOCIAL COMPETENCIES</b></p> <p>K1: Student recognizes the need for, and an ability to engage in lifelong learning.</p> <p>K2: Student understands social, legal, and privacy implications of electronic storage and sharing of biological information</p>
Practice	-
Teaching methods	Discussion, computer exercises, multimedia presentations.