Subject name	**Bioinformatics**	
Subject code	**E.1.BIOI.SC.ECTIE.B**	
Department	**Department of Genetics, Plant Breeding and Seed Science**	
Faculty	**Faculty of Biotechnology and Horticulture**	
Subject supervisor/Lecturer	**Dr. Małgorzata Czernicka**	
General information	**Teaching period**	**1 semester / winter or summer semester**
	ECTS credit	**7**
	Lectures total	**10 h**
	Lab classes	**20 h**
Objective and general description	This course is designed to introduce students to the current bioinformatics algorithms/concepts and their implementations. The course objectives: - teach students cast a molecular biology problem as a bioinformatic problem, - provide the skills necessary to independently select relevant tools, optimize their settings, and build pipelines to solve the set problem.	
Lectures **5 x 2 hours**	1. Introduction to bioinformatics. Bioinformatic databases 2. The role bioinformatics in sequencing projects 3. Sequence alignment algorithms 4. Phylogenetic tree construction 5. Structural bioinformatics	
Lab classes **6 x 3 hours** **1 x 2 hours**	1. Exploration of bioinformatic databases 2. Production and analyzing sequence alignments (DNA and proteins) 3. Gene detection and genome annotation 4. Recovery evolutionary history and building phylogenenetic trees 5. Predicting of RNA and protein secondary structures 6. Bioinformatic project	
Literature	1. Krawetz S.A., Womble D.D. 2003. Introduction to bioinformatics: A theoretical and practical approach. Humana Press, Totowa, New Jersey. 2. Zvelebil M, Braum J.O. 2007. Understanding bioinformatics. Garland Science, New York.	