

Course name: Bioinformatics

ECTS	3
Course status	<i>facultative</i>
Course final assessment /evaluation of outcomes	The grade based on Student's work
Prerequisite	-

Main field of study:

Agriculture and Horticulture, Biology and Biotechnology (Erasmus+)

Educational profile	General academic
Code of studies and education level	bachelor/engineer (SI) or master of science (SM)
Semester of studies	Winter or Summer
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Biotechnology and Horticulture
Name of department offering the course	Department of Plant Biology and Biotechnology
Course coordinator	Dr. Małgorzata Czernicka

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands			
BI_W1	advanced tools and algorithms used in solving bioinformatic problems	EPB2_W01 EPB2_W02	R, P
SKILLS – student is able to			
BI_U1	use specialized databases containing DNA, RNA and protein sequence data	EPB2_U03	R, P
BI_U2	apply bioinformatic tools to analyze biological data	EPB2_U04	R, P
SOCIAL COMPETENCIES – student is ready to:			
BI_K1	individual work while respecting the work of others	EPB2_K02	R, P

Teaching contents

Lectures	...15. hours
Topics	<ol style="list-style-type: none"> 1. Introduction to bioinformatics. Bioinformatic databases. 2. The role bioinformatics in sequencing projects. 3. Sequence alignment algorithms. 4. Phylogenetic tree construction. 5. Structural bioinformatics.
Accomplished learning outcomes	<i>BI_W1</i>
Means of verification, rules and criteria of assessment	Report (50% participation in the final mark)
Classes:15.... hours

Topics	<ol style="list-style-type: none"> 1. <i>Exploration of bioinformatic databases.</i> 2. <i>Raw sequence analysis: quality scoring, assembly, annotation.</i> 3. <i>Sequence similarity search using Blast.</i> 4. <i>Multiple alignment of DNA and protein sequences.</i> 5. <i>Small RNA analysis.</i> 6. <i>Analysis of protein sequence.</i> 7. <i>Bioinformatic project.</i>
Accomplished learning outcomes	<i>BI_U1, BI_U2, BI_K1</i>
Means of verification, rules and criteria of assessment	<i>Bioinformatics project (50% participation in the final mark)</i>

References:

Basic	Zvelebil M, Braum J.O. 2007. Understanding bioinformatics. Garland Science, New York
Supplementary	Krawetz S.A., Womble D.D. 2003. Introduction to bioinformatics: A theoretical and practical approach. Humana Press, Totowa, New Jersey

Structure of learning outcomes

Area of academic study: R – Agricultural, forestry and veterinary sciences	1.5	ECTS**
Area of academic study: P – Biological sciences	1.5	ECTS**

Structure of student activity

Contact hours	40	hrs.	1.6	ECTS**
Including:	lectures	15	hrs.	
	classes and seminars	15	hrs.	
	consultations	7	hrs.	
	participation in research	...	hrs.	
	obligatory traineeships	...	hrs.	
	participation in examination	3	hrs.	
e-learning	...	hrs.	ECTS**
student own work	35	hrs.	1.4	ECTS**

*Areas of academic study in the fields of: H- humanities; S - social studies; P – biological sciences; T – technological sciences; M- medical, sport and health sciences; R – Agricultural, forestry and veterinary sciences; A – the arts

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes