Course name: Plant Genomics

ECTS	3
Course status	*facultative*
Course final assessment /evaluation of outcomes	*Exam*
Prerequisite	*plant biology, basic biochemistry, conventional and molecular genetics*

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	Biotechnology and Horticulture
Name of department offering the course	Plant Biology and Biotechnology
Course coordinator	Prof. dr hab. Dariusz Grzebelus

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands			
PLG_W1	Key issues in structural, functional and comparative genomics	EPB2_W02	R, P
PLG_W2	Basic methods of genome analysis	EPB2_W01 EPB2_W02	R, P
PLG_W3	Principles and methods of DNA sequencing	EPB2_W01 EPB2_W02	R, P
PLG_W4	Basic principles of plant genome evolution	EPB2_W02	R, P
SKILLS – student is able to			
PLG_U1	Utilize online genomic resources and databases of DNA and protein sequences	EPB2_U03 EPB2_U04	R, P
PLG_U2	Perform basic analyses of DNA sequences in silico	EPB2_U01 EPB2_U04	R, P
PLG_U3	Align DNA and protein sequences an evaluate their similarity	EPB2_U01 EPB2_U04	R, P
SOCIAL COMPETENCIES – student is ready to:			

Teaching contents

Lectures	15 hours
Topics	1. Structural and functional genomics. 2. *Arabidopsis thaliana* as a model plant genomes. 3. Methods of genome analysis, genome annotation. 4. Evolution of plant genomes, mobile genetic elements. 5. Comparative genomics.
Accomplished learning outcomes	EPB2_W01, EPB2_W02

Means of verification, rules and criteria of assessment	*Test exam, single choice (51%)*
Classes:	15 hours
Topics	1. Exploration of online sequence databases (DNA and protein). 2. In silico analysis of DNA sequences. 3. Sequence alignment and similarity, identification of polymorphisms.
Accomplished learning outcomes	EPB2_U01, EPB2_U03, EPB2_U04
Means of verification, rules and criteria of assessment	*Case report, demonstration of practical skills (49%)*

References:

Basic	*Meksem K, Kahl G (eds.), 2005. The Handbook of Plant Genome Mapping. Wiley-VCH, Weinheim.* *Sensen CW (ed.), 2005. Handbook of Genome Research. Wiley-VCH, Weinheim, vol. 1 and 2.* *Lankenau D-H, Volff J-N (eds.), 2009. Transposons and the Dynamic Genome. Springer, Dordrecht.*
Supplementary	*The Arabidopsis Genome Initiative, 2000. Analysis of the genome sequence of the flowering plant Arabidopsis thaliana. Nature 408: 796-815.* *Varshney RK, Tuberosa R (eds.), 2007. Genomics-Assisted Crop Improvement. Springer, Dordrecht, vol. 1 and 2.*

Structure of learning outcomes

Area of academic study: agriculture and horticulture	2 ECTS **
Area of academic study: biological sciences	1 ECTS**

Structure of student activity

Contact hours		34	hrs.	1.4	ECTS**
Including:	lectures	15	hrs.		
	classes and seminars	15	hrs.		
	consultations	2	hrs.		
	participation in research	-	hrs.		
	obligatory traineeships	-	hrs.		
	participation in examination	2	hrs.		
e-learning		-	hrs.	-	ECTS**
student own work		41	hrs.	1.6	ECTS**

*areas of academic study in the fields of: P – biological sciences; R – agriculture and horticulture

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