

Course name: GMO development and assessment techniques

ECTS	4
Course status	facultative
Course final assessment /evaluation of outcomes	exam
Prerequisite	basic knowledge on 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	Faculty of Biotechnology and Horticulture
Name of department offering the course	Department of Plant Biology and Biotechnology
Course coordinator	prof. dr hab. Rafał Barański

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands;			
GMO_W1	mechanisms leading to genetic modification of genome	EPB2_W02	R, P
GMO_W2	methods of genomemodification	EPB2_W04	R, P
GMO_W3	legal aspects of GMO authorization and trade	EPB2_W08	R, P
SKILLS – student is able to:			
GMO_U1	create and identify organisms with modified genome	EPB2_U01	R, P
GMO_U2	perform qualitative and quantitative analyses of GMO	EPB2_U05	R, P
SOCIAL COMPETENCIES – student is ready to:			
GMO_K1	work in a group on specific task	EPB2_K02	R, P

Teaching contents

Lectures	15 hours		
Topics	Techniques of transgenesis Techniques of genome editing Methods of transgene elimination Quantitative analysis and labeling Regulations in UE and in the world		
Accomplished learning outcomes	GMO_W1-W3		
Means of verification, rules and criteria of assessment	test (40% share in the final assessment)		
Classes	15 hours		
Topics	Molecular identification of Agrobacterium strains with binary plasmid Plant transformation using A. rhizogenes Detection of transgenic events using molecular techniques Qualitative and quantitative analysis of transgene expression		
Accomplished learning outcomes	GMO_U1-U2, GMO_K1		
Means of verification, rules and criteria of assessment	essay and presentation on selected topic (35%), written report from laboratory classes (25%)		

References:

Basic	<i>Kempken F. i Jung Ch (red) 2010. Genetic modification of plants. Springer, Heidelberg</i> <i>Žel J. et al. 2012 How to reliably test for GMOs. SpringerBriefs in Food, Health, and Nutrition, DOI 10.1007/978-1-4614-1390-5_1</i>
Supplementary	<i>Global Status of Commercialized Biotech/GM Crops. www.isaaa.org</i>

Structure of learning outcomes

Area of academic study: agriculture and horticulture	2.0 ECTS**
Area of academic study: biological sciences	2.0 ECTS**

Structure of student activity

Contact hours	32	hrs.	1.3	ECTS**
Including:				
lectures	15	hrs.		
classes and seminars	15	hrs.		
consultations	1	hrs.		
participation in research	...	hrs.		
obligatory traineeships	...	hrs.		
participation in examination	1	hrs.		
e-learning	...	hrs.	...	ECTS**
student own work	68	hrs.	2.7	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