

<b>Course title</b>		<b>ECTS code</b>				
Transgenic plants (seminar)		13.1.0176				
<b>Name of unit administrating study</b>						
University of Gdańsk						
<b>Teaching staff</b>						
dr Anna Ihnatowicz; prof. dr hab. Ewa Łojkowska						
<b>Studies</b>						
faculty	field of study	type	form	specialty	specialization	semester
Intercollegiate Faculty of Biotechnology UG- MUG	Biotechnology	second tier studies (MA)	full-time	all	all	2
<b>Forms of classes, the realization and number of hours</b>				<b>ECTS credits</b>		
<b>Forms of classes</b>				2		
Seminarium (to translate)						
<b>The realization of activities</b>						
lectures in the classroom						
<b>Number of hours</b>						
Seminarium (to translate): 15 hours						
<b>The academic cycle</b>						
2013/2014 summer semester						
<b>Type of course</b>			<b>Language of instruction</b>			
obligatory			english			
<b>Teaching methods</b>			<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>			
<ul style="list-style-type: none"> <li>- multimedia presentations prepared by students</li> <li>- ćwiczenia audytoryjne - dyskusja (to translate)</li> </ul>			<b>Final evaluation</b>			
			Zaliczenie na ocenę (to translate)			
			<b>Assessment methods</b>			
			<ul style="list-style-type: none"> <li>- ustalenie oceny zaliczeniowej na podstawie ocen częściowych otrzymywanych w trakcie trwania semestru (to translate)</li> <li>- wykonanie pracy zaliczeniowej - projekt lub prezentacja (to translate)</li> </ul>			
			<b>The basic criteria for evaluation</b>			
			<p>Each of the mentioned learning outcomes will be assessed. Students must obtain at least a satisfactory grade for each assessed learning outcome. The final grade will be established on the basis of observing students' work during the semester (record of grades: ability to participate in a discussion, formulate questions, active participation) and constituent grades obtained for multimedia presentations (assessment of contents value, selection of contents and illustrations, presentation style, language correctness and adequate terminology). Multimedia presentations will refer to the selected issues mentioned in the box ' Course Contents)</p>			
<b>Required courses and introductory requirements</b>						
<p><b>A. Formal requirements</b></p> <p><b>B. Prerequisites</b></p> <p>Knowledge in the field of Plant Tissue and Cell Cultures, Plant Biotechnology</p>						
<b>Aims of education</b>						
<p>Acquisition by students of the knowledge in the area of selected problems currently discussed in literature concerning application of biotechnology in constructing and breeding transgenic plants and the issues of related scientific domains and disciplines important in plant biotechnology (K_W03)</p> <p>Acquiring by the student an ability to make use of scientific information, including information in English, concerning</p>						

plant biotechnology and related scientific areas and disciplines. Acquiring an ability to critically analyze and select information as well as make use of written, electronic resources and suitable databases indispensable in carrying out operations in the field of plant biotechnology and related scientific areas and disciplines (K\_U02)  
 Acquiring an ability to use scientific language, including specialist terminology and notional apparatus suitable for biotechnology and related areas and disciplines (K\_U06)  
 Acquiring an ability to prepare and present in Polish and/or English a short oral presentation concerning detailed issues in the field of plant biotechnology and to participate in a discussion (K\_U07)  
 The student will acquire an awareness and understanding of advantages and threats connected with conducting scientific research on transgenic plants and implementing advanced technologies that make use of knowledge of plant biotechnology as well as will recognize and formulate ethical problems concerning plant biotechnology. He/she will also be aware of the social role of a biotechnology graduate, and in particular he will understand the necessity of relaying knowledge and opinions about the achievements of biotechnology in the field of breeding and the benefits to the society of culturing genetically modified plants. He will understand and recognize the significance of intellectual property and behave ethically (K\_K04)

**Course contents**

- The course content concerns the following issues
1. Methods of obtaining transgenic plants, selection and assessment of transformation effectiveness
  2. *Arabidopsis thaliana* as a plant model to define functions of the newly found genes
  3. Applications of RNA interference in plant biotechnology
  4. Application of plant transformation to create varieties with new traits: resistance to biotic factors (pathogens and pests)
  5. Application of plant transformation to create varieties with new traits: resistance to abiotic factors
  6. Production of plants with enhanced utility-technological traits
  7. Production of recombinant proteins and vaccines in transgenic plants.
  8. Commercialization of genetically modified crops.
  9. Legal regulations concerning transgenic plants in the EU, Poland and the world.
  10. Ethical aspects of plant biotechnology and culturing transgenic plants.

**Bibliography of literature**

- A. Literatura wymagana do ostatecznego zaliczenia zajęć (zdania egzaminu):
- A.1. Literature used during classes  
 Biotechnologia roślin. Praca zbiorowa pod redakcją St. Malepszego. Wydawnictwo Naukowe PWN 2009.  
 Publikacje z wybranych czasopism zajmujących się szeroko rozumianą biologią i biotechnologią roślin.
- A.2. Literature individually studied by students  
 Biotechnologia roślin. Praca zbiorowa pod redakcją St. Malepszego. Wydawnictwo Naukowe PWN 2009.  
 Publikacje z wybranych czasopism zajmujących się szeroko rozumianą biologią i biotechnologią roślin.

**The learning outcomes**

- K\_W03
- K\_U02
- K\_U06
- K\_U07
- K\_K04

**Knowledge**

K\_W03 Possesses knowledge in the field of selected issues currently discussed in biotechnological literature and problems concerning related scientific areas and disciplines significant for biotechnology

**Skills**

K\_U02 - Has an ability to proficiently use scientific information, including information in English, concerning biotechnology and related scientific areas and disciplines; critically analyses and selects information, makes use of electronic resources; has an ability to apply suitable databases indispensable in carrying out operations in the field of biotechnology and related scientific areas and disciplines  
 K\_U06 - Uses scientific language, including specialist terminology and notional apparatus proper for biotechnology and related areas and disciplines  
 K\_U07 - Can prepare and present in Polish and/or English a short oral presentation concerning particular issues in the field of biotechnology and related areas and disciplines; has an ability to participate in a discussion

**Social competence**

K\_K04 - Is aware and understands hazards and dilemmas connected with conducting scientific research and implementing advanced technologies that make use of biotechnological achievements, recognizes and formulates ethical problems concerning biotechnology; is aware of the social role of a biotechnology graduate, and understands the necessity of relaying the knowledge and opinions about the achievements of biotechnology to the society; understands and recognizes the significance of intellectual property; behaves ethically

**Contact**

ihnadowicz@biotech.ug.edu.pl