

Nazwa zajęć/ <i>Course title:</i>	Genetyka ogólna	ECTS	5
Nazwa zajęć w j. angielskim/ <i>Course title in English:</i>	General genetics		
Zajęcia dla kierunku studiów/ <i>Degree program name:</i>	Biotechnology		

Język kursu/ <i>Course language:</i>		English		Poziom studiów/ <i>Study level:</i>		I	
Typ studiów/ <i>Form of studies:</i>	X intramural .. extramural	Status zajęć/ <i>Course status</i>	podstawowe/ <i>Basic</i> X kierunkowe/ <i>major</i>	X obowiązkowe/ <i>mandatory</i> .. do wyboru/ <i>elective</i>	Semestr/ <i>Semester:</i>	4 semestr zimowy/ <i>winter semester</i> x semestr letni/ <i>summer semester</i>	
Rok akademicki/ <i>Academic year:</i>				2022/2023	Numer katalogowy/ <i>Catalogue number:</i>	BBT_BTa-1S-4L-28	

Koordynator zajęć/ <i>Course coordinator:</i>	prof. dr hab. Monika Rakoczy-Trojanowska							
Prowadzący zajęcia/ <i>Teachers responsible for the course:</i>	prof. dr hab. Monika Rakoczy-Trojanowska, dr hab. Wiesław Świderek, employees and doctoral students							
Założenia, cele i opis zajęć/ <i>Aims, objectives and description of the course:</i>	<p>The aim of the course is to provide students with knowledge of the genetic and epigenetic determinants of phenotypic and functional variability of organisms as well as modern methods used in plant and animal breeding. This knowledge should be used by students in the further learning process.</p> <p>Lectures: Basic genetic concepts, gene and genome structure, genes and differentiation and development, transposons, natural and induced genetic variation, extra-gene inheritance, basics of genetic analysis, inheritance and heritability, genetic foundations of plant and animal resistance, use of genetics in plant and animal breeding.</p> <p>Exercises: Basics of classical genetics, multiple alleles, lethal genes, sex determination, sex-linked traits; nonallelic interactions, yeast genetic analysis, bacterial genetic analysis, classical genetic mapping, cytoplasmic inheritance, heterosis, quantitative traits and heritability, genetic structure of plant and animal populations, relatedness and inbreeding.</p>							
Formy dydaktyczne, liczba godzin/ <i>Teaching forms, number of hours:</i>	a) lecture; number of hours 30; b) laboratory classes; number of hours 30;							
Metody dydaktyczne/ <i>Teaching methods:</i>	discussion, problem solving, consultation, experience / experiment, possibilities of using distance learning when necessary							
Wymagania formalne i założenia wstępne/ <i>Formal requirements and prerequisites</i>	Molecular biology, biochemistry; Structure and function of DNA and RNA							
Efekty uczenia się/ <i>Learning outcomes:</i>	treść efektu przypisanego do zajęć/ <i>the content of the effect assigned to the course:</i>					Odniesienie do efektu kierunkowego/ <i>Relation to the course outcomes</i>	Siła dla ef. kier*/ <i>Impact on the course outcomes*</i>	
Wiedza (absolwent zna i rozumie) / <i>Knowledge: (the graduate knows and understands)</i>	W1	understands the mechanisms of inheritance of traits, genetic variation as well as the origin and reproduction biology of model species of microorganisms, plants and animals					K_W03 K_W06 K_W10	3 3 3
	W2	knows how to use interdisciplinary knowledge to design and present your own concept of improving plant and animal organisms					K_W03 K_W06 K_W07 K_W10	3 3 3 3
	W3	knows the rules for making changes in genomes and knows how to predict the effects of these changes					K_W03 K_W06 K_W07 K_W10	3 3 3 3
	W4	has the ability to analyze basic issues in genetics and molecular biology and is able to provide and explain various detailed examples					K_W03 K_W06 K_W10	3 3 3
	W5	knows and understands the principles of gene expression					K_W03 K_W06 K_W07 K_W10	3 3 3 3

Umiejętności (absolwent potrafi) /Skills: (the graduate is able to)	U1	can analyze the basic issues of genetics and molecular biology and can give and explain various detailed examples	K_U03 K_U17 K_U18 K_U22	3 3 2 3
	U2	can give and explain specific examples, and is able to give and apply appropriate experimental methods	K_U03 K_U17 K_U22	3 3 3
Kompetencje (absolwent jest gotów do) /Competences: (The graduate is ready to)	K1	is aware of the social importance of understanding the principles of inheritance of traits and genetic improvement of organisms for the production of high-quality food and technological value, including copyright protection	K_K01 K_K02 K_K07	2 2 2
	K2	is ready to expand, deepen and update knowledge and its practical use	K_K01 K_K02 K_K07	2 2 2
Treści programowe zapewniające uzyskanie efektów uczenia się: /Program contents ensuring the achievement of the learning outcomes:		Knowledge of genetic and epigenetic determinants of phenotypic and functional variability of organisms as well as modern methods used in plant and animal breeding. Issues such as: basic genetic concepts, gene and genome structure, genes and differentiation and development, transposons, natural and induced genetic variation, extra-gene inheritance, basics of genetic analysis, inheritance and heritability, genetic foundations of plant and animal immunity, use of genetics in plant breeding and animals.		
Sposób weryfikacji efektów uczenia się/ Methods of the verification of the learning outcomes:		tests during classes, written exam,		
Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiągniętych efektów uczenia się /Details on the verification methods and of the ways of documenting the learning outcomes:		Personal evaluation sheet of the student, periodic written assignments, the content of examination questions with the assessment, the possibility of using distance learning when necessary		
Elementy i wagi mające wpływ na ocenę końcową/Elements and weights influencing the final grade:		The assessment of the learning outcomes consists of: 1 - assessment of the tests on the prepared material, 2 - assessment of the written exam, 3 - assessment of the student's activity during the exercises. You can get a maximum of 100 points for each element. Weight of each element: 1 - 45%, 2 - 45%, 3 - 10%. The condition for completing the course is to obtain the 1 and 2 min. 51% (51) points. The final grade is calculated as the sum of the points obtained for each item (including their weight). The condition for passing the course is to obtain a minimum of 51% of points including all elements		
Miejsce realizacji zajęć/ Teaching place:		Classroom, laboratory		
Literature / <i>Literature</i> : Genetyka krótkie wykłady – P.C. Winter, G.I. Hickley, H.L. Fletcher, tłum. zb. pod red. W. Prus-Głowackiego, Wydawnictwo Naukowe PWN 2006 Genetyka zwierząt – K.M. Charon, M. Światoński, Wydawnictwo Naukowe PWN, wydanie II, 2009 Genetyka – ilustrowany przewodnik – E. Passarge, redaktor wydania polskiego T. Mazurczak, Wydawnictwo Lekarskie PZWL, 2004 Samolubny gen – R. Dawkins, Prószyński Media, 2010 Piątkowska B. i in.. Zbiór zadań i pytań z genetyki. Wyd, UMK w Toruniu, 1998 Articles - recommended by the lecturer on an ongoing basis Włodzimierz Bednarski, Jan Fiedurek, Podstawy biotechnologii przemysłowej, 2007, WNT				
UWAGI/ANNOTATIONS The following scale is used to calculate the final score: 100-91% points - 5.0; 90-81% points - 4.5, 80-71% points - 4.0; 70-61% points - 3.5; 60-51% points - 3.0				

*) 3 – zaawansowany i szczegółowy, 2 – znaczący, 1 – podstawowy/ 3 – significant and detailed, 2 – considerable, 1 – basic,

Wskaźniki ilościowe charakteryzujące moduł/przedmiot/*Quantitative summary of the course*:

Szacunkowa sumaryczna liczba godzin pracy studenta (kontaktowych i pracy własnej) niezbędna dla osiągnięcia zakładanych dla zajęć efektów uczenia się - na tej podstawie należy wypełnić pole ECTS / <i>Estimated number of work hours per student (contact and self-study) essential to achieve the presumed learning outcomes - basis for the calculation of ECTS credits</i> :	167 h
Łączna liczba punktów ECTS, którą student uzyskuje na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia/ <i>Total number of ECTS credits accumulated by the student during contact learning</i> :	2.4 ECTS