

Nazwa zajęć/ <i>Course title:</i>	<b>Biochemia proteomu</b>	ECTS	<b>2</b>
Nazwa zajęć w j. angielskim/ <i>Course title in English:</i>	<b>Proteome biochemistry</b>		
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> x podstawowe/ <i>Basic</i> obowiązkowe/ <i>mandatory</i> kierunkowe/ <i>major</i> X do wyboru/ <i>elective</i>	Semestr/ <i>Semester:</i> 3	X semestr zimowy/ <i>winter semester</i> semestr letni/ <i>summer semester</i>
Rok akademicki/ <i>Academic year:</i>		2022/2023	Numer katalogowy/ <i>Catalogue number:</i> <b>BBT_BTa-1S-3Z-26_4</b>

Koordinator zajęć/ <i>Course coordinator:</i>	<b>Dr. Marek D. Koter</b>			
Prowadzący zajęcia/ <i>Teachers responsible for the course:</i>	Employees of the Department of Genetics, Plant Breeding and Biotechnology: Dr Marek D. Koter			
Założenia, cele i opis zajęć/ <i>Aims, objectives and description of the course:</i>	<p>The aim of the course is to familiarize students with general information on the structure of proteins, the importance of the proteome in the metabolism of cells and organisms, and practical applications in agricultural and medical diagnostics. The aim of the exercises is to get acquainted with some methods and techniques used in proteomics at the in vitro and in silico level.</p> <p>Lectures: Reminder of information about the composition and structure of proteins, various protein structures. What are protein domains and examples of protein functions. How proteins are detected, how their concentration is assessed and how they are involved in protein-protein interactions. What is mass spectrometry and its application in both qualitative and quantitative proteomics. What is the function of post-translational protein modifications and how can such modifications be detected.</p> <p>Exercises: Separation of proteins on polyacrylamide gel and their (staining), detection of protein interactions by Y2H method. Protein sequence analysis towards the detection of their domains. Bioinformatic qualitative and quantitative analysis of protein detection results using mass spectrometry.</p>			
Formy dydaktyczne, liczba godzin/ <i>Teaching forms, number of hours:</i>	a) Lecture; number of hours 15; b) Laboratory classes number of hours 15;			
Metody dydaktyczne/ <i>Teaching methods:</i>	Lecture, discussion, exercises, consultations.			
Wymagania formalne i założenia wstępne/ <i>Formal requirements and prerequisites</i>	Possibilities of using distance learning when necessary (read e.g. pandemic)			
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	The graduate knows and understands the features of various protein structures, basic types of post-translational modifications	K_W 07 K_W 05 K_W 04	3 3 2
	W2	The graduate knows and understands the concept of the proteome and the principles of interaction between proteins.	K_W 07 K_W 05 K_W 04	3 3 2
Umiejętności (absolwent potrafi) <i>/Skills: (the graduate is able to)</i>	U1	A graduate is able to separate proteins using PAGE, and study interactions between proteins using the yeast two-hybrid system	K_U 01 K_U 06	3 3
	U2	The graduate is able to perform an independent analysis of the qualitative and quantitative results of the proteome analysis with the use of mass spectrometry methods.	K_U 01 K_U 06 K_U 17	3 3 2
Kompetencje (absolwent jest gotów do) <i>/Competences: (The graduate is ready to)</i>	K1	The graduate is ready to independently conduct proteomic experiments and analyze their results.	K_K 01	2

<i>Treści programowe zapewniające uzyskanie efektów uczenia się:</i> <i>/Program contents ensuring the achievement of the learning outcomes:</i>	Information on the structure and function of proteins, possible post-translational modifications, interactions between proteins and knowledge of techniques used in proteomics.			
<i>Sposób weryfikacji efektów uczenia się/</i> <i>Methods of the verification of the learning outcomes:</i>	Examination of lectures and test of exercises, Possibilities of using distance education when necessary (read e.g. pandemic)			
<i>Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiągniętych efektów uczenia się</i> <i>/Details on the verification methods and of the ways of documenting the learning outcomes:</i>	Written final exam and written test, Possibilities of using distance learning when necessary (read e.g. pandemic)			
<i>Elementy i wagi mające wpływ na ocenę końcową/Elements and weights influencing the final grade:</i>	50% exam and 50% practice			
<i>Miejsce realizacji zajęć/</i> <i>Teaching place:</i>	Department of Genetics, Plant Breeding and Biotechnology			
<i>Literature / Literaturte:</i> Proteomika i metabolomika Redakcja: Agnieszka Kraj, Anna Drabik, Jerzy Silberring, Wydawnictwo Uniwersytetu Warszawskiego 2. Introduction to Proteomics: Principles and Applications, Nawin C. Mishra, Günter Blobel, Wiley 3. Principles of Proteomics, Richard Twyman, Garland Science 4. Mass Spectrometry for the Novice, John Greaves and John Roboz, CRC Press				
UWAGI/ANNOTATIONS				

\* ) 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>	60 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>	1.2 ECTS