

Nazwa zajęć/ <i>Course title:</i>	<b>Metody produkcji i praktyczne wykorzystanie przeciwciał monoklonalnych</b>	ECTS	4
Nazwa zajęć w j. angielskim/ <i>Course title in English:</i>	<b>Monoclonal antibodies – production and use</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>	podstawowe/ <i>Basic</i> X kierunkowe/ <i>major</i>
		obowiązkowe/ <i>mandatory</i> X do wyboru/ <i>elective</i>	Semestr/ <i>Semester:</i> 6 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-6L-47_3

Koordynator zajęć/ <i>Course coordinator:</i>	dr Magdalena Żmigrodzka			
Prowadzący zajęcia/ <i>Teachers responsible for the course:</i>	dr Magdalena Żmigrodzka and invited specialists			
Założenia, cele i opis zajęć/ <i>Aims, objectives and description of the course:</i>	<p>Lecture topics: Structure and role of antibodies in an animal organism. Poly and monoclonal antibodies. The use of monoclonal antibodies in the diagnosis of infectious diseases. Possibilities of using monoclonal antibodies in medicine. The use of monoclonal antibodies in the diagnosis of neoplastic diseases. Assessment of antigen expression. Application of monoclonal antibodies in diagnostics and therapy of parasitic diseases. Fundamentals of cytometry. The use of antibodies in cytometric studies of red blood cells. Detection of a fetal-maternal leak. Application and labeling of antibodies in immunocytochemistry and histochemistry.</p> <p>The exercises are a practical supplement to the lectures. Exercise topics: Production of monoclonal antibodies. Preparation of monoclonal antibodies for use in vitro and in vivo tests, including: labeling with fluorochromes, biotinylation. Cytometric Academy. Phenotyping of cells isolated from the spleen, thymus and lymph nodes. Immunophenotyping of blood and milk cells. The use of antibodies in cytometric studies of cytokines. Study of the phagocytic activity of neutrophils and peripheral blood monocytes / macrophages and other biological materials (milk, BAL).</p>			
Formy dydaktyczne, liczba godzin/ <i>Teaching forms, number of hours:</i>	a) Lectures: number of hours 15; b) Laboratory classes in the flow cytometry laboratory: number of hours 30;			
Metody dydaktyczne/ <i>Teaching methods:</i>	Classes are held in the Flow Cytometry Laboratory equipped with 2 flow cytometers: FACSCanto II and FACSCalibur with sorter, 2 stations for immunophenotyping of cells and 2 stations for the analysis of cytometric results. The introductory material is presented in the form of multimedia presentations that are shared with students. In the laboratory, students work independently on the basis of prepared procedures. The studio also conducts individual consultations for interested students outside of exercise hours. Students' own work. In necessary cases (e.g. pandemic) possibility of distance education.			
Wymagania formalne i założenia wstępne/ <i>Formal requirements and prerequisites</i>	Immunology Fundamentals of immunology			
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	Basic knowledge of the production and use of monoclonal antibodies for use by flow cytometry, ELISA and immunocytochemistry methods	K_W06 K_W07 K_W08	3 2 2
	W2	Knowledge of the principles of preparing cells from various biological materials for immunophenotyping and evaluation of activity using monoclonal antibodies	K_W06 K_W08	3 2
	W3	The acquired knowledge about the method of flow cytometry and the basic ability to work on this device	K_W06 K_W07	3 2
Umiejętności (absolwent potrafi) <i>/Skills: (the graduate is able to)</i>	U1	the ability to select and prepare monoclonal antibodies for use with flow cytometry, ELISA and immunocytochemistry.	K_U01 K_U14 K_U06	2 1 2

Kompetencje (absolwent jest gotów do) /Competences: (The graduate is ready to)	K1	is determined to put his skills into practice.	K_K02 K_K03	1 1
<i>Treści programowe zapewniające uzyskanie efektów uczenia się:</i>  <i>/Program contents ensuring the achievement of the learning outcomes:</i>	Acquainting with the techniques of producing and using monoclonal antibodies in medicine (hematology, oncology), veterinary medicine (epizootiology) and biology			
Sposób weryfikacji efektów uczenia się/ <i>Methods of the verification of the learning outcomes:</i>	Written credit in the form of 5 questions, checking the knowledge of the issues discussed and presented. The condition for taking the credit is to be present at the tutorials or, in the event of absence (under the applicable study regulations), to pass the tutorial material. In necessary cases (e.g. pandemic), it is possible to pass it remotely.			
Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiągniętych efektów uczenia się <i>/Details on the verification methods and of the ways of documenting the learning outcomes:</i>	Electronic record of the results of the performed determinations in the computer controlling the operation of the cytometer flow-through. Written test results. Entry into the eHMS system. In necessary cases (e.g. pandemic) possibility of distance education.			
Elementy i wagi mające wpływ na ocenę końcową/ <i>Elements and weights influencing the final grade:</i>	Presence and activity during laboratory work, results of the written test			
Miejsce realizacji zajęć/ <i>Teaching place:</i>	Classroom and lecture room for the Department of Animal Pathology, Department of Pathology and Diagnostics Veterinary Department of the Faculty of Veterinary Medicine of the Warsaw University of Life Sciences; MS Teams			
Literature / <i>Literature:</i>	<ol style="list-style-type: none"> <li>1. Immunologia – red. J. Gołąb, M. Jakóbsiak, W. Lasek. PWN, 2002</li> <li>2. Immunologia – I. Roitt, J. Brostoff, D. Male. Wydawnictwo Medyczne Slotwiński Verlag, 1996</li> <li>3. Immunocytochemia – red. M. Zabel. PWN, 1999</li> <li>4. Seminarium z cytofizjologii – red. J. Kawiak. Urban&amp;Partners, 2001.</li> <li>5. Advances in Cell Biology - constant access to all years during the classes</li> </ol>			
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>	100 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>	1.8 ECTS