

MODULE DESCRIPTION (SYLLABUS)

1.	Module: <b style="text-align: center;">Immunology
2.	Language of instruction: English
3.	Faculty: Faculty of Biotechnology
4.	Course/module code: 29-BT-S1-E6-EnIMM (Lect.) 29-BT-S1-E6- EnIMMc (Lab.)
5.	Course/module type (<i>mandatory or elective</i>): mandatory
6.	Programme: Biotechnology
7.	Study cycle (<i>1st/2nd</i>): 1st cycle
8.	Year: 3rd
9.	Semester (<i>autumn or spring</i>): spring
10.	Form of tuition and number of hours: Lecture: 30 h Laboratory: 30 h
11.	Coordinator(s): Lect.: Ewa Marcinkowska, Prof. Lab.: Aleksandra Marchwicka, PhD
12.	Initial requirements (<i>knowledge, skills, social competences</i>): Knowledge of biochemistry and of cell biology.
13.	Objectives: After completion of this course student should understand basic regulatory mechanisms in human immune system, should know mechanisms of action of immunomodulating drugs, methods of production and use of antibodies. After completion of laboratory lessons student should be able to analyze quantitatively and qualitatively immune cells from human peripheral blood and to study such functions of immune cells as phagocytosis and production of reactive oxygen species. Student should be able to project and perform ELISA tests.

14.	<p>Content:</p> <ul style="list-style-type: none"> • Structure and function of the immune system. • Innate and acquired immunity. • Immunoglobulins, their types and function. • Immune tolerance, MHC system and its functions. • Immunology of reproduction, immune tolerance towards fetus, immune causes of infertility. • Immunity of newborns. • Grafts and immunosuppression. • Primary and acquired immunodeficiencies. • Autoimmunity, causes, symptoms and treatment. • Allergies, diagnostics and treatment. • Vaccination. • Tumor immunology. • Inflammation and anti-inflammatory drugs. • Immune techniques in diagnostics and in research. • Antibodies, polyclonal and monoclonal, modifications of antibodies and their use. 	
1.	<p>Learning outcomes: Student:</p> <ul style="list-style-type: none"> • is able to analyze quantitatively and qualitatively describe immune processes in human body; • is able to perform reasoning based on acquired data and should be able to interpret them; • knows current tools and methods used in immunology; • performs basic physical and chemical measurements; • has gained continuous interest in advances of immunology; • knows and follows the rules of safety and health at work. 	<p>Outcome symbols:</p> <p>K1_W01, K1_W03, K1_W05, K1_W06, K1_W08, K1_U07, K1_K01, K1_K05</p>
2.	<p>Obligatory and recommended literature:</p> <ul style="list-style-type: none"> • <i>Immunology 8th ed.</i> Male D., Brostoff J., Roth DE. and Roitt IM. Saunders; • <i>Janeway's Immunobiology 8th ed.</i> Murphy K, Garland Science. 	
3.	<p>Methods of verification of the assumed learning outcomes:</p> <p>Lect.: written exam Lab.: class-test, report from laboratory, understanding and engagement in performed experiments.</p>	
4.	<p>Conditions of earning credits:</p> <p>Lect.: positive exam result Lab.: • positive class-test result,</p>	

	<ul style="list-style-type: none"> • active participation in laboratory classes; • proper preparation of written reports on the experiments performed. 	
5.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme): <ul style="list-style-type: none"> • Lect.: 30 h • Lab.: 30 h 	60 h
	Student's own work: <ul style="list-style-type: none"> • preparation before class (lecture, etc.): 15 h • reading set literature: 5 h • writing course report: 10 h • preparing for exam: 35 h 	65 h
	Total number of hours:	125 h
	Number of ECTS: <ul style="list-style-type: none"> • Lect.: 3 ECTS • Lab.: 2 ECTS 	5 ECTS