# SYLLABUS OF THE EDUCATIONAL COMPONENT

## VETERINARY IMMUNOLOGY

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| speciality | 211 – Veterinary Medicine | Discipline status | mandatory |
| Field of knowledge | ветеринарна медицина | Faculty | Veterinary Medicine |
| educational level | Not limited | department | Department of epizootology and microbiology |

### TEACHER


## Harahulya Halina

**Higher education - veterinary medicine specialty**
**Scientific degree - candidate of veterinary sciences, specialty 16.00.03-veterinary microbiology, virology and immunology**
**Academic title - associate professor**
**Work experience - 24 years**
**Indicators of professional activity on the subject of the course:**
- author of 15 methodological developments;
- 24 years of experience in scientific work;
- participant of scientific and methodical conferences.

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| **Tel.** | **0661333555** | **e-mail** | **vetvir.galina@gmail.com** | **remote support** | **Moodle** |


**Candidates of veterinary sciences, Basko Sabina, are involved in the teaching of the discipline**

## GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

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| The purpose of the discipline | The purpose of the discipline "Veterinary Immunology" is to provide students with the necessary theoretical knowledge and practical skills and abilities on the technique of obtaining and preparing for research biological material obtained from animals for conducting immunological studies, establishing immunological indicators and their further interpretation in the course of diagnosing infectious diseases of animals and establishing their immune status. |
| Format | lectures, practical employment (occupations), self-contained work of students, consultations. |
| Detailing of learning results and forms of their control | • the ability to observe the rules of personal safety when researching animals, using knowledge about their fixation, follow the rules of personal hygiene, use the rules of asepsis and antiseptics when carrying out any intervention or research<br>• the ability to conduct research at an appropriate level, apply knowledge in practical situations, use tools, special devices for carrying out special manipulations during the performance of professional tasks<br>• ability to carry out vaccination by enteral and parenteral methods<br>• understand and find out the specifics of conducting clinical research in order to form conclusions about the condition of the animal and establish the effectiveness of vaccination<br>• ability to abstract thinking, analysis, synthesis, search, processing of information from various sources |
| Scope and forms of control | 3 ECTS credits (90 hours): 14 hours of lectures, 30 hours of laboratory-practical classes; 46 hours of self-study, current control (2 chapters); final control - differentiated assessment. |
| The teacher's requirements | timely completion of tasks, activity, teamwork |
| Enrollment conditions | "free enrollment" |

## COMPLIANCE WITH THE EDUCATION STANDARD AND EDUCATIONAL PROGRAM

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| Competences | GC1. Ability to abstract thinking, analysis and synthesis.<br>GC 2. Ability to apply knowledge in practical situations.<br>GC 3. Knowledge and understanding of the subject field and profession.<br>SC 6. The ability to select, pack, fix and send samples of biological material for laboratory research.<br>SC 7. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results. | Program learning outcomes | PLO 1. Know and correctly use the terminology of veterinary medicine.<br>PLO 2. Use information from domestic and foreign sources to develop diagnostic, treatment and business strategies. |

## STRUCTURE OF THE EDUCATIONAL COMPONENT

### Chapter 1 Theoretical foundations of veterinary vaccinology

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| Lecture 1 | INTRODUCTION INTO IMMUNOLOGY. THE INNATE DEFENSE MECHANISMS | Practical classes 1 (PC 1) | Rules of work in the immunological laboratory | | Theories of the development of immunology. Evolution of the immune system. Scientists-immunologists, laureates of the Nobel Prize - independent |

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| Lecture 2 | Basic molecules of the immune system | PC 2 | Study of organs of the immune system | | biography of an individual scientist.<br>Morphological features of the structure of the central and peripheral organs of the immune system.<br>Types of phagocytes and their functions (neutrophils, monocytes, macrophages, SMF).<br>Phagocytosis and complement as non-specific factors of immunity.<br>Phagocytosis and complement - participation in specific immune reactions.<br>The role of T- and B-lymphocytes in immunity.<br>Differentiation of T-lymphocytes in the thymus.<br>The mechanism of lymphocyte circulation.<br>Groups of mediators and their functions (pro-inflammatory and anti-inflammatory). Interaction of cellular and humoral factors of immunity during the inflammatory reaction.<br>Superfamily of immunoglobulins (Ig). Formation and differentiation of Ig. Classes Ig. Switching classes Ig. |
| | | PC 3 | Study of immunocompetent cells of various organs | | |
| Lecture 3 | IMMUNE CELLS | PC 4 | Study of non-specific immunity factors using the example of lysozyme. | Independent work | |
| | | PC 5 | Study of phagocytic activity of neutrophils | | |
| Lecture 4 | The inflammatory response. Part 1. | PC 6 | Obtaining bacterial antigens. | | |
| | | PC 7 | Blood serum as a source of immunoglobulins. Obtaining hyperimmune sera. Isolation of individual classes of immunoglobulins. | | |
| Chapter 2. Clinical veterinary immunology | | | | | |
| Lecture 5 | Adaptive immune response. | PC 8 | Serological reactions. Precipitation reaction (RP) and its modifications (Ascoli reaction, RDP). | Independent work | Features of the immune response to different types of antigens (AG).<br>Antigen (AG) and antibody (AT) interaction phenomena and methods of their detection. The role of serological research methods in infectious pathology and their features.<br>Methods of obtaining monoclonal antibodies |
| | | PC 9 | The phenomenon of agglutination. Qualitative agglutination reactions (RA). | | |
| | | PC 10 | Hemagglutination reactions (HA,HI) | | |
| Lecture 6 | REGULATION OF ADAPTIVE IMMUNITY | PC 11 | Complement binding reaction (CFT). Neutralization reaction (NT) | | |
| | | PC 12 | The phenomenon of labels. Immunofluorescence reaction (IF). | | |

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| Lecture 7 | Immunity to Bacteria, Virus, Fungi, Helminths and Protozoa | PC 13 | Enzyme immunoassay. ELISA. | | Types of diagnostics (AG-no and AT-no), methods of their manufacture, application. Peculiarities of preparation of material for research. Comparison of the sensitivity of different serological reactions. Immunohematology: blood groups, Rhesus factor system, hemolytic disease. Hypersensitivity. Transplantation. Immunodeficiencies. Autoimmune diseases. |
| | | PC 14 | Monoclonal antibodies. | | |
| | | PC 15 | Reaction of rosette formation. Immune status of the body. Final lesson. | | |

## BASIC LITERATURE AND METHODOLOGICAL MATERIALS


1. Goldsby, R.A., Kindt, T., Osborne, B. and Kuby, J. (2003) *Immunology,5th edition*, New York, W.H. Freeman.
2. Tizard I.R. Veterinary immunology. – 9th ed. – Elsevier, 2013. – 615p.


Electronic information resources

https://www.youtube.com/watch?v=6fwu7AES9z8
https://www.youtube.com/watch?v=AomdQO0tskU
https://www.youtube.com/watch?v=vmlLj1aLZ7s
https://www.youtube.com/watch?v=oYnXeAPieN0
https://www.youtube.com/watch?v=h9lxx6x3HAM
https://www.youtube.com/watch?v=nwYlk4eB7yA

## EVALUATION SYSTEM

| System | | points | ACTIVITY TO BE EVALUATED |
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| Final assessment | 100 ECTS points (standard) | up to 50 | 50% of the average grade for the chapters |
| | | up to 50 | final testing |
| Rating of section | 100 points totals | up to 50 | answers to test questions |
| | | up to 20 | oral answers in laboratory-practical classes |
| | | up to 30 | the result of mastering the block of independent work |

## NORMS OF ACADEMIC ETHICS AND CHARITY

All participants in the educational process (including those seeking education) must adhere to the code of academic integrity and the requirements prescribed in the provision "On academic integrity of participants in the educational process of DBTU": show discipline, education, respect each other's dignity, show kindness, honesty, responsibility