Module name	**Human immunology with elements of virology**
Module code	B-BM.069Eng
ISCED code	0511: Biology
Study cycle	*I*^{o}
Semester	winter
Responsible for this module	Magdalena Mizerska-Kowalska Department of Virology and Immunology magdalena.mizerska-dudka@poczta.umcs.lublin.pl
Language of instruction	English
Website	https://www.umcs.pl/pl/addres-book-employee,1852,pl.html
Prerequisites	general knowledge of medical microbiology and cell biology
ECTS	5
ECTS points hour equivalents	The hours with academic teacher: - the lecture - 30 hours - the laboratory - 30 hours The sum of hours with academic teacher: 30 hours The hours without academic teacher: - the analysis of literature: 15 hours, - preparing for the laboratory: 25 hours - preparing for the exam and exam: 25 hours The sum of hours without teacher: 65 hours **The sum of all hours concerned with the course: 125 hours** **The sum of ECTS points:5**
Learning outcomes verification methods	Lecture – test Laboratory class - the activity and preparation to the laboratory, and tests (2/semester). It is obligatory to achieve 51% to pass the tests.
Course full description	**Lecture :** 1. The role and basic features of the immune system. Organs and cells of the immune system. 2. Passive and active mechanisms of innate immunity (phagocytosis, complement system, non-specific bactericidal substances, interferon). Recognition of microorganisms by non-specific mechanisms of immunity. 3. Lymphocyte differentiation, population and subpopulation. 4. Structure and biological characteristics of antigens and antibodies. 5. Humoral and cellular immune response. 6. Mechanisms of communication between cells of the immune system (cytokines, adhesion molecules). 7. Structure and role of MALT and SALT. 8. Anti-infective immunity against various groups of microorganisms (bacteria, viruses, fungi) and parasites. 9. Immune tolerance - mechanisms that provide self-tolerance, factors leading to the abolition of self-tolerance, some autoimmune diseases. 10. Types of hypersensitivity, mechanisms of hypersensitivity, examples of hypersensitivity related diseases, basic diagnostic tests.

	11. General characteristics of viruses - structure, properties, classification, replication. Theories of origin of viruses. 13. Variability of viruses on the example of influenza virus. 14. Pathomechanisms of viral infections. **Laboratory class:** 1. The assessment of phagocytic activity of monocytes – Wright's method. 3. Methods of leukocytes isolation used in immunological studies. The evaluation of cells viability. 4. The quantitative and qualitative methods of lymphocytes detection. 5. The practical application of antigen-antibodies reaction. Active and passive agglutination (red blood cells grouping test; latex tests), and ELISA assay. 6. Methods of viruses culturing - virus culturing by means of birds embryos 7. Methods of viruses quantification - the hemagglutination test.
Bibliography	Janeway's Immunobiology. K. Murphy, P. Travers, M. Walport C.A. Janeway, P. Travers; Garland Science, Seventh Edition. Fundamental Immunology. P. E. William; Lippincott Williams &Wilkins, Fifth edition. Viruses Biology Applications Control. D. V. Harper D.V., Garland Science 2012. Human and Medical Virology" ed. B.W.J. Mahy 2010.
Learning outcomes	**KNOWLEDGE** The graduate knows and understands: • the structure, mechanisms and role of human immune system • the role of immune system in defence against infectious diseases and in tumors, and knows the immunotherapies methods • the role of abnormal reactions of immune system in pathogenesis of human diseases • basic knowledge about the biology of viruses and viral infections of human **SKILLS** The graduate: • knows the basic immunological and virological techniques • is able to select properly and apply appropriate the basic immunological and virological techniques • is able to carry out the basic immunological and virological techniques **SOCIAL COMPETENCES** The graduate: • is ready for continuous improvement, acquisition, extension, and updating of knowledge about health protection and methods used in immunology and virology
Practice	The laboratory classes provide the practical study of the basic immunological and virological techniques

Teaching methods	multimedia presentations; audiovisual presentations, assays, experiments, discussion, observations