



No	The name of the module, academic discipline, course project (course work)	Exams	End-of-term test	Academic hours					Courses / Semesters												Credits	Competence code				
				Total	Total in class	As follows:				I course						II course										
						Lectures	Laboratory work	Workshops	Seminar classes	1 semester, 18 weeks			2 semester, 16 weeks			3 semester, 17 weeks			4 semester							
										Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class			Credits			
4	Series of disciplines for candidate exams and additional training <sup>1</sup>			/568	/316	/96	/36	/140	/44	/358	/202	/6	/210	/114	/9											
4.1	Philosophy and Methodology of Science	/2		/240	/104	/60			/44	/140	/60		/100	/44	/6											UC-5
4.2	Foreign Language	/2	/1	/220	/140			/140		/110	/70	/3	/110	/70	/3											UC-6
4.3	Information Technologies: Basics		/1	/108	/72	/36	/36			/108	/72	/3														UC-7
Number of Hours				3350	1020	454		566		1046	360	30	900	320	24	1404	340	42							96	
Number of Hours per Week										20			20			20										
Number of Course projects																										
Number of Course works				1									1													
Number of Exams				10						3			3			4										
Number of End-of-term tests				11						4			3			4										

IV. Internship				V. Research			VI. Final Certification	
Internship Title	Semester	Weeks	Credits	Semester	Weeks	Credits	Master's Thesis	
Research	2	4	6	4	8	12		
Industrial	4	4	6					

### VII. Competence matrix

Competence code	Competence	Code Module, Discipline Code
UC-1	To be able to apply methods of scientific cognition (analysis, comparison, systematization, abstraction, modeling, validation of data reliability, decision-making, etc.) in independent research activities, generate and implement innovative ideas	1.4
UC-2	To be able to independently learn and develop new methods of research, to innovative, research and research and education activities, to put forward independent hypotheses, to work in conditions of uncertainty	1.1, 1.2, 1.4
UC-3	To be able to analyze the relevance of scientific research, to be able to correctly set research tasks, to apply scientifically based planning techniques, to master the methods of processing theoretical and experimental results research, correctly formulating conclusions, possessing the skills of conducting reasoned discussions on scientific and professional issues	1.4
UC-4	To be able to carry out pedagogical activities in educational institutions, to master and implement effective educational and information and communication technologies, pedagogical innovations	3.1
UC-5	To master the methodology of scientific cognition, to be able to analyze and evaluate the content and level of philosophical and methodological problems in solving problems of research and innovation	4.1
UC-6	To master a foreign language for communication in an interdisciplinary and scientific environment, in various forms of international cooperation, research and innovation	4.2
UC-7	To gain the skills to use modern information technology to solve research and innovation problems	4.3
DPC-1	To understand modern methods of management of living systems on the basis of the principles of environmental science and ecology, a set of approaches to their research, including the correct planning of a biological experiment, analysis of datasets, assessment and interpretation of the results	1.1
DPC-2	To be able to analyze the features of the structural and functional organization of genomes and epigenomes of different groups of organisms, to understand the genetic and epigenetic mechanisms of biological processes in cells and organisms, to use methodological approaches to analyzing the structural organization of genomes, gene functions and other structural elements of the genome to solve research problems	1.2
DPC-3	To gain skills in techniques of bioinformatics, algorithms for processing different types of molecular-biological data, programming skills, mathematical and statistical data analysis	1.3
SC-1	To be able to develop modern problems of higher nervous activity, to apply in practice knowledge of the integrative functions of the central nervous system to analyze the behavioral activity of animals and humans, to characterize molecular fundamentals immunogenetics and treatment of human immune diseases	2.1
SC-2	To be able to use knowledge about the molecular basis of cell systems and bio-signaling mechanisms in the development of current issues of animal and plant physiology, biotechnology, ecology, pharmacy, agriculture	2.2
SC-3	To possess the theoretical foundations of autecology, synecology, systemic ecology of microorganisms, to be able to characterize the peculiarities of the biology of phytopathogenic microorganisms, the etiology of plant pathogenesis and ways to protect them from phytopathogens	2.3
SC-4	To possess modern knowledge and practical skills in the field of electrophysiology, analysis of the generation of active forms of oxygen and the development of symptoms of programmed cell death and autophagy in eukaryotes cells, to be able to develop fundamental and applied problems of physiology, biochemistry, biophysics and bioengineering using patch-clamp, potential fixation, electron paramagnetic resonance spectroscopy and other modern approaches of cell biology	2.4
SC-5	To possess modern knowledge in the field of oncoimmunology, nonspecific and specific immunotherapy, be able to analyze and predict the pathophysiological consequences of oxidative stress at the level of cells, tissues and the whole organism	2.5
SC-6	To be able to apply knowledge of algorithms and approaches used in the analysis of genomic and transcriptomics data, to solve molecular-genetic problems in fundamental and applied research, to master the methods of molecular taxonomy	2.6
SC-7	To be able to use modern methods of phenotyping, fluorescent microscopy and luminometry to solve the fundamental and applied problems of biology and bioengineering	2.7

Developed on the basis of the model curriculum in the specialty 1-31 80 01 «Biology» No. G 31-2-001/ap.-mod. 21.03.2019

<sup>1</sup> Series of Disciplines for Candidate Exams and Additional Training «Philosophy and Methodology of Science», «Foreign Language», «Information Technologies: Basics» are studied according to the choice of a student

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