

Контрольный экземпляр 34. 3. 2 уг.

BELARUSSIAN STATE UNIVERSITY

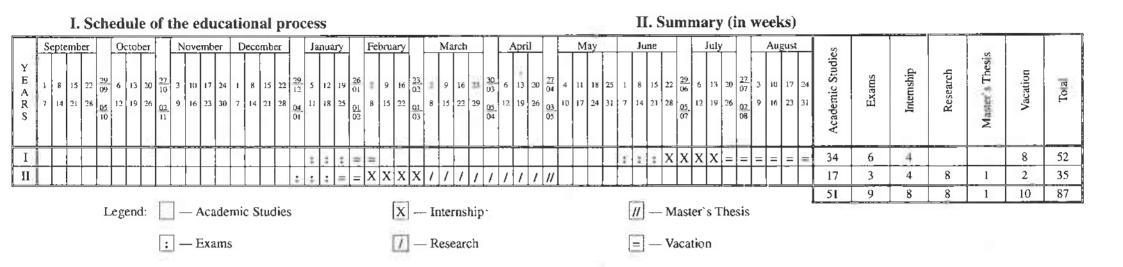
CURRICULUM

Speciality: 1-31 80 01 Biology

Degree: Master

Profiling: Molecular and Clinical Biology

Period of study: 1 year 8 months



III.	Curr	icul	lum
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					F	Academ	ic hou	rs		Ì				Co	urses /	Seme	sters				- 0		
						As follows:				I course						II course						1	de
No	The name of the module, academic discipline, course project (course work)	us	rm test		lass		ork	Workshops	ses		semes 18 wee			2 semest 16 weel			3 semes 17 wee	ter,	1	semeste	mester		sce coo
		Exams	End-of-term test	Total	Total in class	Lectures	Laboratory work		Se	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Credits	Competence code
1	State Component			1194	264	138		126		324	92	9	348	100	9	522	72	15				33	
1.1	Module «Man and the Biosphere»		1)										1				UC-2
						1 1				<u> </u>													DPC-1
1.1.1	Environmentology	1		_ 108	46	30		16		108	46	3		L								3	
1.1.2	Methodology of Bioenvironmental Sciences		1	108	46	8		38		108	46	3										3	
1.2	Module «Genomics and					ļ													i i		1 1		UC-2
1.2.1	Epigenetics» Structural and Functional Organization of			<u> </u>		1										 			[DPC-2
1.2.1	Genomes	2	. 8	120	50	30		20					120	50	3							3	
1.2.2	Epigenetics	2	+	120	50	30		20					120	50	3							3	
1.3	Module «Bioinformatics and	-		120	50			40		1			120	50	5	<u> </u>						5	DPC-3
	Programming»		1	1									:										DICJ
1.3.1	Fundamentals of Bioinformatics	3		108	36	20		16								108	36	3				3	
1.3.2	Introduction to R Programming	3		108	36	20		16	1	ł – –						108	36	3				3	
1.4	Module «Academic Research»	i —																					UC-
																							1,2,3
1.4.1	Research Seminar		1,3	414						108		3	1			306		9				12	
1.4.2	Course Work			108						L			108		3							3	
2	Higher Education Institution Component	ļ		2156	756	316		440		722	268	21	552	220	15	882	268	27				63	
2.1	Module «Neurobiology and		1	j.	- 1)	L																	SC-1
2.1.1	Immunogenetics»			100						100					_								
2.1.1	Neurobiology Immunogenetics	1		198	54	34		20		198	54	6	ļ			1						6	
2.1.2	Module «Cell Biology and Signal			110	. 36	26		10		110	36	3										3	00.0
	Transduction»																		i				SC-2
2.2.1	Cell Biology		+	198	54	34		20		198	54	6	<u> </u>						!		-	6	
Н	Signal Transduction	-	2	120	50	34	_	16		170		0	120	50	3							3	
	Module «Microbial Ecology and			120	20			10		1			120		5								SC-3
	Phytopathology »					ŧ.				f i									:				000
2.3.1	Microbial Ecology	2	1	108	36	24		12					108	36	3			1				3	
	Phytopathology		2	108	36	24		12					108	36	3							3	
2.4	Module «Techniques of Cell Biology»																						SC-4
2.4.1	Practicals on Cell and Molecular Biology		1,2,3	630	292	12	_	280		216	124	6	216	98	6	198	70	6				18	
2.5	Module «Oncoimmunology and Free	92			j)]	SC-5
	Radical Biology»	_																					
	Oncoimmunology	3	1	198	54	34		20								198	54	6				6	
	Free Radical Biology	3		198	_ 54	34		20					ļ			<u>19</u> 8	54	6				6	
2.6	Modules for choice (1 of 2)		-																				
2.6.1	Module «Analysis of Genomic and																						SC-6
2611	Transcriptomic Data» Deep Analysis of Transcriptomics Data		2	109	54	34	1	20								100	5.4						_
	Molecular Taxonomy		3	198 90	36	26		10								198	54	6				6	
	Module «Phenomic Analysis and		3	90	50	20	-	10								90	36	3				3	60.7
1	Bioimaging»			5																			SC-7
2.6.2.1	Phenomics		3	198	54	34		20			_					198	54	6	┝───┤			6	
	Fluorescent and Luminescent Bioimaging		3	90	36	26		10								90	36	3			_	3	
3	Optional subjects		- 1	/108	/56	/30		/26		/108	/56	/3				- 20	50					5	
	Creative Teaching Techniques in Higher	_		1100	100	150		140		1100	100	13		•									UC-4
	School / Pedagogics and Psychology of Higher Education		/1	/108	/56	/30		/26		/108	/56	/3											00-4

No	The name of the module, academic discipline, course project (course work)	-			Academic hours Courses / Semesters										l I								
			test		As follows:					I course II course										1	ode		
		xams	-of-term te		class		work	ss	Seminar classes	1 semester, 18 weeks		2 semester, 16 weeks			3 semester, 17 weeks			4 semester			lits	. O	
		Exa	End-of-	Total	Total in	Lectures	Laboratory v			Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Credits	Competence
4	Series of disciplines for candidate exams and additional training ¹		1	/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	0	/100	/44	/6								UC-5
4.2	Foreign Language	/2	/1	/220	/140			/140		7110	/70	/3	/110	/70	/3					_			UC-6
4.3	Information Technologies: Basics		/1	/108	/72	/36	/36			/108	/72	/3	Î									1	UC-7
Number	r of Hours			3350	1020	454		566	1	1046	360	30	900	320	24	1404	340	42				96	
Numbe	r of Hours per Week										20			20		i	20				_	1	1.000
Number	r of Course projects														-	l —					-		
Number	r of Course works		_	1						1		-		1	-		_	_				-	
Number	r of Exams			10							3		1	3	_		4						
Number	r of End-of-term tests			11							4	1		3		1	4				1		

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

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	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	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 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	2.4
SC-5	modern approaches of cell biology 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	2.6

		in fundamental and applied research, to master the methods of molecular taxonomy	- 27
ľ	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	2.7
		bioengineering	

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

¹ 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

AGREED

AGREED Vice-Rector for Academic Affairs and Education Innovations ______Oksana N. Zdrok «_______Oksana N. Zdrok

AGREED Dean of the Biological Faculty Vadim V. Demidchik « <u>Of</u> » _____ 2020