

SYLLABUS
Fall semester 2022-2023 academic years
on the educational program "8D05101 - Biology"
Doctor's degree 1 year, 1 semester

Discipline's code	Discipline's title	Independent work of students (IWS)	Number of credits			Number of credits	Independent work of student with teacher (IWST)	
			Lectures (L)	Practical training (PT)	Laboratory (Lab)			
PMB	Problems of Modern Biology		15	30	0	5	7	
Academic course information								
Form of education	Type of course	Types of lectures	Types of practical training		Form of final control			
Full-time	Theoretical	problematic, analytical lecture	solving problems, situational tasks		Exam Writing / "Univer".			
Lecturer	Amirova Aigul, candidate of biological science							
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Telephone number	+77086924842							
Aim of course	Expected Learning Outcomes (LO)* As a result of studying the discipline the undergraduate will be able to:			Indicators of LO achievement (ID) (for each LO at least 2 indicators)				
"Problems of Modern Biology" provides teaching to PhD students depth knowledge about the place of Biology in the spectrum of sciences, structure and the basic tenets of modern Biology. and major unsolved problems in modern Biology and their possible implications.	1. Assess achievements of fundamental sciences on which modern biology is based in accordance with the specialty and specialization.			1.1 Explain the relationship of modern biology with other disciplines; Summarize the achievements of modern biology and biotechnology. 1.2 Master the procedure for setting up an optimal experiment and processing measurement results				
	2. Use advanced technologies in professional activities and systematize the results of scientific research by processing literary data. Explain the modern problems of biology.			2.1 Apply the progressive technology within the professional activity in the specialty of biology; 2.2 Master the methodological foundations of scientific knowledge and creativity in practice.				
	3. Improve qualifications in the professional field of biology; in scientific and pedagogical work by the specialty.			3.1 Apply the acquired knowledge in the professional field of biology; 3.2 Use the acquired knowledge and skills in scientific and pedagogical work by the specialty.				
	4 Summarize the information obtained from literary sources on biology and related sciences.			4.1 Analyze the information obtained from literary sources; 4.2 Master the modern information on the biotechnology and related sciences.				
	5. Plan and manage projects; be able to find and make decisions among different opinions.			5.1 Compose the projects and manage of them; 5.2 Identify the problems, find and make decisions in the context of different opinions.				
Prerequisites	"General and Molecular Genetics", "Biochemistry", "Molecular Biology", "Genetic Engineering".							
Post requisites	PhD students can use an evolutionary approach in solving the specific scientific problems.							
Information resources **	Literature:** 1. Космин, В. В. Основы научных исследований (Общий курс) [текст] : учеб. пособие . - 2-е изд. - М. : Риор, 2014. - 214 с. 2. Герасимов, Борис Иванович. Основы научных исследований. - Москва ; Москва : Издательство "ФОРУМ" : ООО "Научно-издательский центр ИНФРА-М", 2013. - 272 с. 3. Леонова, Ольга Владимировна. Основы научных исследований. - 1. - Москва : Московская государственная академия водного транспорта (МГАВТ), 2015. - 72 с.							

	<p>4. Шкляр, Михаил Филиппович. Основы научных исследований. - Москва : Издательско-торговая корпорация "Дашков и К", 2018. - 208 с.</p> <p>5. Shanti Bhushan Mishra and Shashi Alok Handbook of research methodology. – India 2017. – 28 p.</p> <p>6. В. А. Бакулев, Н. П. Бельская, В. С. Берсенева Основы научного исследования. - Екатеринбург: Изд-во Урал. ун-та, 2014. – 64 с.</p> <p>Internet resources: Internet resources (at least 3-5)</p> <ol style="list-style-type: none"> 1. http://elibrary.kaznu.kz/ru 2. https://www.goodreads.com/ 3. https://www.coursera.org/ 4. https://www.edx.org/
Academic policy of the course in the context of university moral and ethical values	<p>Academic Behavior Rules: All students are required to register for the MOOC. The deadlines for completing the modules of the online course must be strictly observed in accordance with the schedule for studying the discipline. Leave in case of current MOOC or SPOC courses.</p> <p>ATTENTION! Failure to meet deadlines results in loss of points! The deadline for each task is indicated in the calendar (schedule) for the implementation of the content of the training course, as well as in the MOOC. Leave in case of current MOOC or SPOC courses.</p> <p>Academic values:</p> <ul style="list-style-type: none"> - Practical trainings/laboratories, IWS should be independent, creative. - Plagiarism, forgery, cheating at all stages of control are unacceptable. - Students with disabilities can receive counseling at e-mail *****@gmail.com.
Evaluation and attestation policy	<p>Criteria-based evaluation: assessment of learning outcomes in relation to descriptors (verification of the formation of competencies in midterm control and exams).</p> <p>Summative evaluation: assessment of work activity in an audience (at a webinar); assessment of the completed task.</p>

CALENDAR (SCHEDULE) THE IMPLEMENTATION OF THE COURSE CONTENT:

week	Topic name	Number of hours	Max. score***
Module 1 Introduction. History and methodology of biology science.			
1	Lec 1. Introduction. History and methodology of biology science.	1	
1	Sem 1. Biology as a science. Scientific Research Methods.	2	10
2	Lec 2. What is the New Biology? Problems of modern biology.	1	
2	Sem 2. The New Biology's Great Potential.	2	9
2	IWST 1. Consultation on the implementation of IWS1 on the topic: Biosphere and human. Space and humanity.	1	
3	Lec 3. Individual development of organisms.	1	
3	Sem 3. The main problems of developmental biology.	2	9
3	IWS 1. Presentation	2	20
Module 2 Solving the problems of modern biology.			
4	Lec 4. Questions and problems of development theories of evolution.	1	
4	Sem 4. Origin of life. The development of organisms on the planet.	2	9
	IWST 2. Colloquium (essay).	1	15
5	Lec 5. The problem of creating sufficient food potential for a growing human population.	1	
5	Sem 5. A new biology approach to the food challenge.	2	9
6	Lec 6. The development of genetic engineering methods.	1	
6	Sem 6. Genetic engineering in the future. Advantages and disadvantages of genetic engineering.	2	9
7	Lec 7. Decoding the genomes of plants, animals and humans.	1	

7	Sem 7. The prospect of Human genome project.	2	10
7	IWST 3. Consultation on the implementation of the IWS 2.	1	
	LEVEL CONTROL 1		100
8	Lec 8. Rational organization of human life.	1	
8	Sem 8. Development of the problem of life extension.	2	7
8	IWS 2. Origin of life. A new biology approach to the health challenge: understanding individual health. Development of new anti-aging drugs and technologies.	2	20
9	Lec 9. The study of the structure of macromolecules and the identification of its influence on their functions – key problems of modern biology.	1	
9	Sem 9. The main biomolecules. Structure and functions of macromolecules.	2	7
10	Lec 10 Problems of regulation of intracellular processes.	1	
10	Sem 10. Regulation of cell functions.	2	7
10	IWST 4. Consultation on the implementation of IWS1 on the topic: The main problems of developmental biology.	1	8
11	Lec 11 Biological aging. Various theories of aging.	1	
11	Sem 11. Theories about the reasons of aging and solutions of this problem.	2	7
12	Lec 12 The study of the mechanisms of brain activity.	1	
12	Sem 12. Cognition of the laws of thinking and memory processes.	2	7
12	IWST 5. Consultation on the implementation of the IWS 3 on the topic: Modern problems of biology and biotechnology: prospects of the development of GE and HGP. The study of the mechanisms of brain activity.	1	
13	Lec 13 Biosphere and humanity. Prediction the future of the planet and humanity.	1	
13	Sem 13. The study of the biosphere as a dialectical unity of living and non-living nature.	2	7
13	IWS 3. Presentation	2	15
14	Lec 14 Biology and astronautics. Biology and problems of technology.	1	
14	Sem 14. Reproduction and modeling of biological processes and design of new technical systems and devices.	2	7
	IWST 6. Colloquium (essay). Topic, type of task.	1	
15	Lec 15 A new biology approach to the energy challenge.	1	
15	Sem 15. Expand sustainable alternatives to fossil fuels.	2	8
15	IWST 7. Consultation on examination issues	1	
	LEVEL CONTROL 2		100

Dean _____ Zayadan B.K.

Head of Department _____ Zhunusbayeva Zh.K.

Lecturer _____ Amirova A.K.