NON-PROFIT JOINT-STOCK COMPANY
«AL-FARABI KAZAKH NATIONAL UNIVERSITY»

MODULE HANDBOOK

EDUCATION PROGRAMME

7M01504-BIOLOGY (MA)

(pedagogical training)

CLUSTER A

https://www.kaznu.kz/en/25196/page/

ALMATY, 2022

Content

Purpose of education programme

Training of highly qualified specialists with a system of knowledge in biology, pedagogy, psychology, with a holistic view of modern achievements in the natural sciences for next work as a teacher in biology educational field and a researcher in educational and scientific centers.

Learning outcomes

ON 1. To use the obtained knowledge in the field of biology for setting and solving new problems of educational biology;

ON 2. To use modern pedagogical theories, didactic principles of teaching biology.

ON 3. To use innovative and interactive technologies, methods, means and forms of organization of teaching biological disciplines in educational process.

ON 4. To organize the inclusive education of biology for children with health disabilities (HBS).

ON 5. Systematically present programs for planning, organizing and practical implementation of educational activities for certain types of training sessions (laboratory, practical and seminar sessions) in biological disciplines in educational organizations.

ON 6. To manage a team in the field of education, selecting a qualified teaching staff, evaluating the quality indicators of education.

ON 7. To manage the research work of students, formulating the goals and objectives of scientific research, choosing the appropriate methodology, independently analyzing the available information, solving fundamental problems or identifying the new fundamental problems, to equip the classrooms and laboratories with modern equipment.

ON 8. To use the concepts of biological Sciences for the formation of scientific and pedagogical outlook.

ON 9. To apply modern computer technologies (IT) in educational training, in knowledge control, in the collection, storage, processing, analysis and transmission of experimental biological information for subsequent solution of problems in the field of biology, independently mastering new information technologies.

ON 10. To perform the pilot and laboratory biological research at solving specific problems with using modern equipment, being responsible for the quality of work and the scientific reliability of the obtained results.

ON 11. To carry out in practice the integration of sciences, using data from related sciences for themselves professional purposes.

ON 12. To build the professional relationships with colleagues and management board taking into account socio-cultural differences between people in professional activities, with flexible adaptation to non-standard situations that occur and happen at work.

Learning Objectives-Module Matrix

Module name *(наименование модулей)*	**Learning outcomes**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
M1 Module of history and philosophy of science	+		+				+	+	+	+	+	
M2 Psychology and Pedagogy Module	+	+	+	+	+	+	+	+				+
M3 Basics of the organization of biological education. Elective component 1.	+	+	+		+		+	+	+	+	+	
M3 Problems of modern biology. Elective component 2.	+	+	+		+		+	+	+	+	+	
M4 Scientific and pedagogical methods of research		+	+	+	+	+	+		+			+
M5 Application of innovative technology in biology					+	+	+		+	+	+	
M6 Integration of disciplines in teaching biology. Elective component 1.	+		+		+				+	+	+	
M6 Organization and management of educational process. Elective component 2.		+	+	+	+	+	+	+			+	

Course structure

RESEARCH	
UNIVERSITY COMPONENT	ELECTIVE COMPONENT
24	

CORE DISCIPLINES *(Базовые дисциплины*	
UNIVERSITY COMPONENT	ELECTIVE COMPONENT
20	15
35	

MAJOR DISCIPLINES *(Профильные дисциплины)*	
UNIVERSITY COMPONENT	ELECTIVE COMPONENT
31	18
49	

TERM

1	*Name of Module* M-1 IFN 5201 History and Philosophy of science 3 ECTS M-2 PVSh 5203 Pedagogy of higher education 3 ECTS M-2 PP 5205 Teaching Internship 5 ECTS	*Name of Module* M-3 KBO 5206 Concepts of biological education 6 ECTS M-3 IGB 5206 Selected chapters of biology 6 ECTS	*Name of Module* M-4 OPNI 5301 Organization and planning of scientific research 6 ECTS M-4 IBO 5202 Inclusive biological education 6 ECTS	**RES.** Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 3 ECTS	27
2	*Name of Module* M-1 IYa 5202 Foreign Language (professional) 6 ECTS M-2 PU 5204 Psychology of management 3 ECTS	*Name of Module* M-3 SPTPB 5207 Modern problems of theoretical and practical biology 9 ECTS MAPB 5207 Interdisciplinary aspects of biology teaching 9 ECTS	*Name of Module* M-4 MUUP 5303 Methodology and management of educational process 6 ECTS	**RES.** Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 4 ECTS	33

3	M-5 CKBO 6304 Digital content in biological education 9 ECTS	M-6 SOTB 6306 Modern educational technologies in biology 9 ECTS M-6 PVLBO 6307 The use of a virtual laboratory in biological education 9 ECTS M-6 MPBOP 6306 Methods of teaching biology for the renewed program 9 ECTS M-6 MBPB 6307 The material base of teaching biology 9 ECTS	Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 2 ECTS	33

4	**RESEARCH** Master's Student Research (MSR), Including Scientifing Internship And Dissertation Writing 15 ECTS	FINAL ATTESTATION 12 ECTS	27

List of modules

Workload HPW (Hours per week) according – Teaching methods as lecture, seminar, lab works and others (lesson, project, etc.)

Module/Disciplines	**ECTS**	**Workload HPW** *(Hours per week)*				**Term**
		lec.	**sem.**	**lab.**	**other**	
Name of Module						
Core disciplines (CD). University component	**20**					
M-1 Module on history and philosophy of science						
IFN 5201 History and Philosophy of science	3	1,5	1,5	-	-	1
IYa 5202 Foreign Language (professional)	6	-	6			2
M-2 Psychology and Pedagogy Module						
PVSh 5203 Pedagogy of higher education	3	1,5	1,5	-	-	1
PU 5204 Psychology of management	3	1,5	1,5	-	-	2
PP 5205 Teaching Internship	5	-	5	-	-	1
Elective component	**15**					
M-3 Basics of the organization of biological education						
KBO 5206 Concepts of biological education	6	3	3	-	-	1
SPTPB 5207 Modern problems of theoretical and practical biology	9	3	6	-	-	2

or						
M-3 Problems of modern biology						
IGB 5206 Selected chapters of biology	6	3	3	-	-	1
MAPB 5207 Interdisciplinary aspects of biology teaching	9	3	6	-	-	2
Major disciplines (MD). University component	**31**					
M-4 Scientific and pedagogical methods of research						
OPNI 5301 Organization and planning of scientific research	6	1,5	4	-	-	1
IBO 5202 Inclusive biological education	6	3	3	-	-	1
MUUP 5303 Methodology and management of educational process	6	3	3	-	-	2
M-5 Application of innovative technology in biology						
CKBO 6304 Digital content in biological education	9	3	6	-	-	3
IP 6305 Research practice (1^{-st} type as Internship practice - abroad travel to one of series contract Universities for 2 weeks)	4			4		3
Elective component (EC)	**18**					
M-6 Integration of disciplines in teaching of biology						
SOTB 6306 Modern educational technologies in biology	9	3	6	-	-	3
PVLBO 6307 The use of a virtual laboratory in biological education	9	3	6	-	-	3
or						
M-6 Organization and management of educational process						
MPBOP 6306 Methods of teaching biology for the renewed program	9	3	6	-	-	3
MBPB 6307 The material base of teaching biology	9	3	6	-	-	3
MASTER'S STUDENT RESEARCH work under master thesis or dissertation – duration 60 weeks	**24**					
MASTER'S STUDENT RESEARCH (MSR), INCLUDING SCIENTIFING INTERNSHIP AND DISSERTATION WRITING						
NIRM 1 Research Seminar	3	1	1	1	-	1,2,3
NIRM 2 Dissertation Writing	14	2	3	2	7	1,2,3,4
NIRM 3 Scientific Internship ($2-^{nd}$ type of scientific Internship practice in local research bases or Institutes or public schools – for writing master dissertation)	3	-	-	-	3	4
NIRM 4 Publication in the Proceedings of International Conferences	4	-	-	-	4	4
FINAL ATTESTATION	**12**					
TOTAL	**120**					

Core Disciplines (CD)

ELECTIVE COMPONENT (EC)

Concepts of biological education

Module Objectives. Students will be able to:

1. Interpret and generalize modern scientific knowledge in the field of modern biology;
2. Assess the feasibility of applying the basic theories and methods of modern biology in scientific, practical and research activities;
3. Analyze the range of hypotheses and theories on unsolved problems of modern biology;
4. Evaluate the promising trends in development of biological education; own a variety of methods used in the study of biological disciplines;
5. To develop the professional orientation of thinking and competence of the future teacher of higher education level, to master the modern teaching methods using computer technology;
6. Formulate the problems and objectives of scientific research, choose the appropriate methodology.

Module designation	***Concepts of biological education***
Credit points	6
Semester(s) in which the module is taught	1
Relation to curriculum	M-3. Basics of the organization of biological education Theoretical educating/ Core disciplines (CD)/ Elective component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 2 hours per week for Seminar, total 30 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Bassygarayev Zhandos, PhD** Senior Lecturer of Department of Biophysics, Biomedicine and Neuroscience
Language	Kazakh
Required and recommended prerequisites for joining the module	biology, zoology, botany, biochemistry, biophysics, physiology, anatomy, morphology, evolution ecology, social ecology, biotechnology, genetic engineering, molecular biology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* the methods and means of biological knowledge, modern methodological theories, discipline goals, laws and patterns of design, development and implementation of content, objects; *be able to:* use the concepts of biological sciences to form a scientific and pedagogical worldview *own:* methods of collecting the necessary information, its correct design, demonstration and use it in educational activities. Independently uses modern computer technologies to solve research and production and technological problems

	of professional activity, to collect and analyze biological information. *Undergraduates acquire practical skills:* the ability to use the acquired knowledge to substantiate their position when discussing various scientific projects, regulations and legislative acts, using practical methods, arranging the results of studying issues as actually obtained and obtained from other scientific disciplinary courses.
Content	Formation of undergraduates professional pedagogical competence (personality and activity) of a biology teacher in teaching, educating and developing students of different ages with the help of school biology in future professional activities, teaching practice
Examination forms	Oral examination
Reading list	1. Agureeva O.V. Concepts of modern natural science. Short course. M. Okeu-book, 2020, 160 p. 2. Babushkin A.N. Concepts of modern natural science. M. Lan 2016, 208 p. 3. Baksansky O.E. Nanotechnology, biomedicine, philosophy of education in the mirror of an interdisciplinary context. Moscow, Gostekhizdat, 2016, 950 p. 4. Bryzgalina E.V. Concepts of modern natural science. M. Prospect 2020, 494 p. 5. Koshkimbaev K.S., Atambaeva G.K., Tusupbevoka G.A., Ydyrys A., Kulbaeva M.S., Basygaraev Zh.M. Modern natural science concepts (bioogy). Learning Tool. Almaty, KazNU 2018 6. Internet resources: http://www.mpda.ru http://inpo.s-vfu.ru http://www.eclom.ru/human/kse.html

Modern problems of theoretical and practical biology

Module Objectives. Students will be able to:

1. form the ability to use natural science knowledge and the laws of nature in the analysis and solution of common problems professional activity for orientation in modern biological space.
2. clearly define the place of biological sciences in the system of natural sciences;
3. know the sequence of studying biological disciplines in secondary general, secondary vocational and higher educational institutions;
4. own a variety of techniques used in the study of biological disciplines;
5. master modern teaching methods based on the use of computer equipment;
6. find in the flow of information the necessary information about the latest developments concerning the methods of teaching biology;
7. evaluate promising trends in the development of biological education;
8. develop the professional orientation of thinking and competence of the future higher education teacher.

Module designation	***Modern problems of theoretical and practical biology***
Credit points	9
Semester(s) in which the module is taught	2
Relation to curriculum	M-3. Basics of the organization of biological education Theoretical educating/ Core disciplines (CD)/ Elective component
Teaching methods	Lectures, Seminars, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 2 hours per week for Seminar, total 30 Contact hours. Independent work of student - 98 hours
Persons responsible for the module	**Ashirova Zhadyra, PhD** Senior lecturer of Department of Biophysics, Biomedicine and Neuroscience
	Kenzheeva Zhanar, PhD Senior lecturer of Department of Biophysics, Biomedicine and Neuroscience
Language	English
Required and recommended prerequisites for joining the module	Common biology, zoology, botany, biochemistry, biophysics, physiology, anatomy, morphology, evolution ecology, social ecology, biotechnology, genetic engineering, molecular biology, microbiology, molecular biology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* and apply the system of methodological knowledge for the implementation of the educational process in biology lessons in a general education school at the modern level with accent on theoretical and practical approaches; main modern problems of biology; understand the importance modern biological science and practice; *be able to:* apply the acquired knowledge to solve scientific, industrial and practical problems; *own:* methods of collecting the necessary information, its correct design, demonstration and use it in educational activities or practical experience. *Undergraduates acquire practical skills:* methodological foundations of teaching modern biological science and practical issues of application of biology and obtained from other scientific disciplinary courses.
Content	Formation of understanding of modern methodological knowledge for the implementation of the educational process in biology lessons in a secondary school at the modern level, including the importance of biology as a science and in practice.
Examination forms	Written examination
Reading list	1. Arbuzova E.N. Methodology of teaching biology. Moscow, JURAYT, 2018 2. Nikishov A.N. Methods of teaching biology at school. Methodical manual Vlados, 2014 3. Tormanov N. T., Toleukhanov S.T., Ablaikhanova N.T., Ursheeva B.I. The concept of biology education and

	innovative teaching methods. Study Tool. Almaty, "Kazakh University" 2016 4. Sharipkhanova A.S., Davytova Z.S., Biology teaching methodology. Textbook Almaty 2019 5. Yakuncheva M.A. Methods of teaching biology. Moscow, 2008 6. Nikishov A.N. Theory and methodology of teaching biology, Moscow, KolosS, 2007 7. The problem of methodical teaching of biology in secondary school. Under ed. I.D. Zvereva 1987

Selected chapters of biology

Module Objectives. Students will be able to:

1. form the ability to use fundamental biological concepts in the field of professional activities for the formulation and solution of new tasks. And also have readiness for self-development, self-realization, use of creative potential.
2. interpret the main trends in the development of scientific knowledge in the field of biology;
3. assess the current problems of the development of scientific knowledge in the field of biology;
4. to form the skills of applied research in the field of biology;
5. to formulate problems and tasks of scientific research, choose the appropriate methodology;
6. possess modern scientific information necessary to improve the effectiveness of professional activity;
7. carry out independent scientific research in the field of biology;
8. use the obtained theoretical knowledge in practice and in experimental studies; - use the knowledge of the selected heads of biologists to form a natural-science picture of the world and put it into practice.

Module designation	***Selected chapters of biology***
Credit points	6
Semester(s) in which the module is taught	1
Relation to curriculum	M-3. Problems of modern biology Theoretical educating/ Core disciplines (CD)/ Elective component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 1 hour per week for Lecture, total 15 Contact hours. 1 hours per week for Seminar, total 15 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Askarova Zifa Asanbaevna, PhD** Associate Professor of Department of Biomedicine, Biophysics and Neuroscience
	Ablaykhanova Nurshanyat, PhD Associate Professor of Department of Biomedicine, Biophysics and Neuroscience
Language	Russian and Kazakh
Required and recommended prerequisites for joining the module	Common biology, biochemistry, biophysics, mathematics, physiology, immunology, genetics, ecology, pharmacy, biotechnology

Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know:* the subject, tasks and methods of physiology as a science of body functions Principles and mechanisms of action of homeostatic systems of various organisms; *Possess:* theoretical knowledge about the functions of the nervous, endocrine, cardiovascular, respiratory, excretory and other body systems; *Undergraduates acquire practical skills:* demonstrate knowledge of history and methodology of biological sciences, expanding general professional, fundamental training, master the basic methods of experimental physiological research.
Content	Formation of students' skills to conduct. research in solving specific problems on specialization with using modern equipment and computing tools, demonstrate responsibility for quality of work and the scientific reliability of results related to the educational process; be able to work in a group, express your opinion, find a language with fellow students and express the features of subject, maintain a critical attitude towards yourself, systemically using a systematic approach to psychophysiological mechanisms in the analysis of the functional state of human brain, Evaluation of modern problems and achievements of physiology, principles, patterns and methods.
Examination forms	Written examination
Reading list	1. Batuev A.S., Physiology of higher nervous activity and sensory systems: a textbook for universities / A.S. Batuev. St. Petersburg: Piter, 2010. -316 p. 2. Kogan B. M., Mashilov K. V. Anatomy, physiology and pathology of the sensory system: a textbook for universities. - M .: Aspect Press, 2011. - 384 p. 3. Kovalzon V. M. Fundamentals of somnology: physiology and neurochemistry of the wakefulness-sleep cycle - M .: BINOM. Knowledge Laboratory, 2011. - 239 p. 4. Sokolova N.V., Higher nervous activity and human psyche: Textbook / N.V. V. Sokolova; Northeastern State University. Magadan: [Publishing House of the North-Eastern University], 2010. - 67 p. 5. Stolyarenko A.M., Physiology of higher nervous activity for psychologists and teachers: Textbook for universities / A.M. M. Stolyarenko. M .: UNITY-DANA, 2009. - 463 p.. 6. Bekhtereva, N. P. Healthy and sick human brain / N. P. Bekhtereva; [res. ed. V. A. Ilyukhin]; USSR Academy of Sciences, Department of Physiology. Leningrad: Nauka, 1988. - 262 p. 7. Brin, V.; B, Human physiology in schemes and tables / Brin V.B. [text] Rostov n/D: Phoenix, 1999. - 352 p. 8. Internet resources: http://elibrary.kaznu.kz/ru http://www.studentlibrary.ru

Interdisciplinary aspects of biology teaching

Module Objectives. Students will be able to:

1. formate a holistic system understanding of system of methodological knowledge, ways of working and creative experience, ensuring the effective implementation of the learning process for biologists, using and taking into account the interdisciplinary connections with other sciences.
2. interpret the specifics of biologists and its relationship with other natural sciences;
3. classify methods of teaching biologists;
4. conduct research relevant to identify the interdisciplinary aspect of biologists;
5. analyze the role of communication methodological, educational and constructive aspects in the teaching of biology;
6. solve problems in an interdisciplinary context;
7. integrate interdisciplinary knowledge in biology education;
8. evaluate and interpret the latest achievements of interdisciplinary aspects of biology.
9. substantiate the role and importance of key ideological biological concepts.

Module designation	***Interdisciplinary aspects of biology teaching***
Credit points	9
Semester(s) in which the module is taught	3
Relation to curriculum	M-3. Problems of modern biology Theoretical educating/ Core disciplines (CD)/ Elective component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 4 hours per week for Seminar, total 60 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Kulmurzayeva Laila, PhD** Acting docent of Department of Biophysics, Biomedicine and Neuroscience
Language	English
Required and recommended prerequisites for joining the module	General biology, biochemistry, biophysics, mathematics, physiology, immunology, genetics, breeding, ecology, pharmacy, botany, biological engineering, biotechnology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* the methods and means of biological knowledge, modern methodological theories, holistic, systematic knowledge of various sciences in their connection with biology; *be able to:* use the concepts and interconnections biology with other sciences to form the broad scientific and pedagogical worldview *own:* methods of collecting the necessary information and it's interdisciplinary demonstration and use in educational activities. *Undergraduates acquire practical skills:* the ability to use the acquired knowledge to substantiate their position when discussing the various scientific projects, regulations and legislative acts, using practical methods, arranging the results of studying issues as actually obtained and obtained from other scientific disciplinary courses.

Content	Formation of interdisciplinary approacch at professional pedagogical competence (personality and team-activity) of a biology teacher
Examination forms	Oral examination
Reading list	1. State compulsory Education Standards (Resolution of Government of the Republic of Kazakhstan) 2018-2020 Orders of Ministry of Education and Science of RK: №604 from 31.10.2018 “Approval of State compulsory education standards at all levels of education", with updates №182 dated 05.05.2020 and №372 dated 28.08.2020 and №130 from 06.04.2020 “Approval of the List of documents mandatory for teachers in organizations of secondary, technical, professional, post-secondary education, and their forms"». 2. Textbooks of Biology of Ministry of Education and Science of RK (7- 11grades). Editions 2017-2019. 3. Journal «Biology in school». M. 2011-2020 years. 4. Educational Programs on subject Biology as part of “Natural Sciece” at secondary school (7-11 grades) of Ministry of Education and Science of RK, National Academy of Education named after Y. Altynsarin. Astana 2013 5. Materials of lectures of senior lecturer Kulmurzayeva L.R., PhD. educational material are available on site https://univer.kaznu.kz in chapter EMCD 6. Internet – resource. e-library KazNU on link http://elibrary.kaznu.kz/ru

Major Disciplines (MD)

University Component

Inclusive biological education

Module Objectives. Students will be able to:

1. carry out a pedagogical support of socialization and professional self-determination of students and readiness for psychological and pedagogical support of the educational process in biology for the education of children with health disabilities in the process of inclusive education.
2. demonstrate the concept of inclusive education;
3. improve practical skills in inclusive education; - to own techniques and technologies for inclusive education;
4. systematize, generalize and disseminate methodological experience in inclusive education;
5. apply the recommended methods and technologies that allow to solve diagnostic and correctional development tasks;
6. carry out correctional and pedagogical activities in an inclusive education;
7. possess skills of self-education and social and professional mobility based on knowledge about the prospects for the provision of educational services to children with disabilities;
8. advise parents of children with health disabilities.

Module designation	***Inclusive biological education***
Credit points	6
Semester(s) in which the module is taught	1
Relation to curriculum	M-4: Scientific and pedagogical methods of research Theoretical educating/ Major disciplines (MD) /University component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 2 hours per week for Seminar, total 30 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Abdrasulova Zhanna Tubekbaevna, PhD** Acting Associate Professor Department of Biophysics, Biomedicine and Neuroscience
Language	Kazakh and Russian languages
Required and recommended prerequisites for joining the module	Methods of teaching biology, General pedagogy, pedagogical practice
Module objectives/intended learning outcomes	The purpose of the course is the ability to carry out a pedagogical support of socialization and professional self-determination of students and readiness for psychological and pedagogical support of educational process in biology for education of children with disabilities in process of inclusive education. As a result of studying the course, undergraduates should: - demonstrate the concept of inclusive education; - improve practical skills in inclusive education; - own techniques and technologies for inclusive education; - systematize, generalize and disseminate methodological experience in inclusive education; - apply the recommended methods and technologies that allow to solve diagnostic and correctional development tasks; -carry out correctional and pedagogical activities in an inclusive education; - possess skills of self-education and social and professional mobility based on knowledge about the prospects for the provision of educational services to children with disabilities; - advise parents of children with disabilities.
Content	During the study of the discipline students will learn following aspects: regulatory support of inclusive education; general characteristics of SES for children with disabilities; development of an individual educational route for children with disabilities in teaching biology
Examination forms	Witten examination
Reading list	1. Inclusive education: Textbook / N.A. Borisova, I.A. Bukina, I.A. Buchilova, etc.; comp. O.L. Lekhanova. –

	Cherepovets: ChSU, 2016. – 162 p. ISBN 978-5-85341-716-8. 2. Mombekova Z.A. Inclusive education in the Republic of Kazakhstan: problems and prospects. Almaty 2014. 190 p. 3. Chris Tomlin, Tim Loreman. Measurement of inclusive education. Emerald -2014. -312 p. 4. B. P. Brunov, V. I. Petrochenko. Children with disabilities: an anthology on special pedagogy and psychology. Part I - Krasnoyarsk: KSPU named after V. P. Astafyev, 2009. - 236 p. 5. Pugachev A.S. Inclusive education // Young scientist. - 2012. - No. 10. - pp. 374-377 6. D. Mitchell. Effective pedagogical technologies of special and inclusive 7. Internet resources: https://www.ncbi.nlm.nih.gov https://serc.carleton.edu https://ru.coursera.org/ https://www.edx.org

Methodology and management of the educational process

Module Objectives. Students will be able to:

1. create to research, organize and evaluate the educational process using management technologies, as well as to develop, implement methods, technologies and techniques of training and their use in the management of the educational process.
2. demonstrate the concept of modern management in education;
3. interpret the features of the development and functioning of education as a social institution;
4. use modern teaching methods and technologies;
5. formulate the goals and objectives of pedagogical management in education in accordance with modern problems;
6. use in practice the skills in organizing research and design work, in team management;
7. interpret the latest achievements in the management of the educational process;
8. organize the conduct of office work;
9. possess the skills of professional thinking necessary for the timely definition of the goals and objectives of their professional activities in the field of pedagogical management.

Module designation	***Methodology and management of the educational process***
Credit points	6
Semester(s) in which the module is taught	2
Relation to curriculum	M-4: Scientific and pedagogical methods of research Theoretical educating/ Major disciplines (MD) /University component
Teaching methods	Lectures, IWS

Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Abdrasulova Zhanna Tubekbaevna, PhD** Acting Associate Professor Department of Biophysics, Biomedicine and Neuroscience
Language	Kazakh
Required and recommended prerequisites for joining the module	Methods of teaching biology, General pedagogy, pedagogical practice
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* the basic business approaches to the organization of the educational process, modern methods of management of the educational process. *be able to:* apply acquired knowledge to solve pedagogical, practical problems, conflict situations, as well as to find solutions in case of identified inconsistencies with the state educational standard during the management and organization of the educational process in institutions. *be able to use:* methods for setting goals, assessing potential risks, the ability to delegate authority, decision-making skills, assessing the presence of conditions for demotivation, the ability to give feedback. *Students acquire practical skills***:** in conducting debates and brainstorming sessions, solving logical tasks and collecting various kinds of information, conducting project teamwork, public speaking, preparing essays, critical thinking while arguing their point of view.
Content	To train and form managerial competence with the application of management methods and state obligatory standards in the organization, management and preparation of the educational process
Examination forms	Witten examination Standard, Test online
Reading list	1. Zhaytapova A.A. Sadvakasova Z.M. Management lessons in the organization of education. – Almaty, 2007. – 224 p. 2. Zhaytapova A.A., Sadvakasova Z.M., Kabdoldanova B.A. Quality management in the organization of education. - Almaty, 2010. – 279 p. 3. Sadvakasova Z.M. Organizational management in education: schemes and tables. Uch.pos. - Almaty, 2006.-140c. 4. Islamgulova S.K. School development management: technological aspect. Uch.method.pos. – Almaty: IPK PKSO, 2010. – 300s. 5. Pedagogical management in the system of modern education / Edited by O.V. Gukalenko. - Tiraspol, 2003. 6. Belaya G.V. Theoretical foundations of university management. - M., 2001. 7. Management in education: experience, problems, innovations. - Arkhangelsk, 2004.

	8. Internet resources: https://www.ncbi.nlm.nih.gov https://serc.carleton.edu https://ru.coursera.org/ https://www.edx.org

Module designation	***Methodology and management of the educational process***
Credit points	6
Semester(s) in which the module is taught	2
Relation to curriculum	M-4: Scientific and pedagogical methods of research Theoretical educating/ Major disciplines (MD) /University component
Teaching methods	Lectures, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. Independent work of student - 98 hours
Persons responsible for the module	**Tormanova Anel Nurtaevna, PhD** Acting docent of Department of Biophysics, Biomedicine and Neuroscience
	Bassygarayev Zhandos, PhD Senior Lecturer of Department of Biophysics, Biomedicine and Neuroscience
Language	Russian and Kazakh
Required and recommended prerequisites for joining the module	Methods of teaching biology, General pedagogy, pedagogical practice, common biology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* the basic business approaches to the organization of the educational process, modern methods of management of the educational process. *be able to:* apply acquired knowledge to solve pedagogical, practical problems, conflict situations, as well as to find solutions in case of identified inconsistencies with the state educational standard during the management and organization of the educational process in institutions. *be able to use:* methods for setting goals, assessing potential risks, the ability to delegate authority, decision-making skills, assessing the presence of conditions for demotivation, the ability to give feedback. *Students acquire practical skills***:** in conducting debates and brainstorming sessions, solving logical tasks and collecting various kinds of information, conducting project teamwork, public speaking, preparing essays, critical thinking while arguing their point of view.
Content	To train and form managerial competence with the application of management methods and state obligatory

	standards in the organization, management and preparation of the educational process
Examination forms	Standard, Test online
Reading list	1. "On Approval of the State Compulsory Standards of Education for all levels of education" Order of the Ministry of Education and Science of RK dated October 31, 2018, № 604 2. On Education - Law of RK of 27.07.2017, № 319-III 3. Appendix № 7 to the Decree of the Government of the Republic of Kazakhstan dated May 13, 2016 № 292 4. Sadvakasova Z.M. Pedagogical management. Textbook. 2-2e ed. ext. - Almaty, 2012. - 187 c. 5. Lectures of the teacher Tormanova A.N. in "Univer-Zhuyesi", section UMKD KazNU http://univer.kaznu.kz 6. Internet resources: http://elibrary.kaznu.kz/ru http://lib.teacher.msu.ru/pub/2017 https://students-library.com/library/read/60508-metody-priemy-sredstva-organizacii-i-upravlenia-pedagogiceskim-processom http://usu.kz/upravlenie_uchebnym_protsessom.php http://student39.ru/lector/Metody-priemy_i_formy_obucheniya/

Digital content in bilogical education

Module Objectives. Students will be able to:

1. form the ability to solve the standard tasks of professional activity on based on digital content using information and communication technologies for the collection and analysis of biological information and electronic resources in the educational process.
2. understand the principles of implementation and application of information and communication technologies in the educational process;
3. implement the use of information and communication technology training in practice;
4. apply the methodological framework for design and implementation of field and laboratory biological research with using modern equipment and computer systems,
5. apply modern computer technologies in collection, storage, processing, analysis and transfer of biological information;
6. use modern computer technology to solve research and production and technical problems of professional activity;
7. apply modern distance learning technologies in practice;
8. search for information in global networks using typical browsers;
9. possess the skills of computer processing of experimental results.

Module designation	***Digital content in bilogical education***
Credit points	9
Semester(s) in which the module is taught	3

Relation to curriculum	M-5. Application of innovative technology in biologу Theoretical educating/ Major disciplines (MD) /University component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 4 hours per week for Seminar, total 60 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Ashirova Zhadyra, PhD** Senior Lecturer of Department of Biophysics, Biomedicine and Neuroscience
Language	English
Required and recommended prerequisites for joining the module	General biology, molecular biology, zoology, botany, pedagogy, theoretical biology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: *know* the main trends in the use of digital technologies in modern science and education; *be able to* applicate the main directions of using of digital technologies in biological research and education; the features and main approaches to the use of digital technologies in their future professional activities; *Students acquire practical skills*: select, extract and use from information sources the necessary information to solve the educational and recearch tasks.
Content	To develop the principles, concepts and issues related to the use of digital technologies to support learning and create a new digital contents and apply them in educational practice
Examination forms	Test examination
Reading list	1. Teaching and Digital Technologies: Big Issues and Critical Questions Paperback. January 8, 2016 by Michael Henderson (Editor), Geoff Romeo (Editor) 2. Forsyth, E. (2016). Using videoconferencing for professional development and meetings. Computers in Libraries, 36(7), 11-14. 3. Remis, K. K. (2015). LMS enhances K12 instruction: Systems increase engagement, provide quick access to digital resources and help teachers with administrative tasks. District Administration, Digital Edition, May 27, 2015 http://www.districtadministration.com/article/lms-enhances-instruction 4. Dominic, M. (2016). Handbook of Research on Mobile Learning in Contemporary Classrooms. Hershey, PA: IGI Global. 5. Korakakis, G. G., Pavlatou, E. A., Palyvos, J. A. and Spyrellis, N. N. (2009) “3D visual ization types in multimedia applications for science learning: A case study for 8th grade studen ts in Greece”, Computers & Education, Vol 52, pp 390-401.

	6. Biancarosa, G., & Griffiths, G. C. (2012). Technology tools to support reading in the digital age. The Future of Children, 22(2), 139-160. http://www.jstor.org/stable/23317415?seq=1&cid=pdf-reference#page_scan_tab_contents

Research Practice

Internal Code of KazNU IP 6305

According approved Curriculum, where IP6305 code (Research practice) has 4 ECTS in III semester during 2 years of education of masters - it includes the contact hours and self-studies in hours in III semester.

Additionally there is separate next 2 part in Curriculum with name as "Master's student research" with nomenclature and descriptions of four activities with codes as NIRM 1, NIRM 2, NIRM 3, NIRM 4. These activities with cost of 24 ECTS are located in all I-IV semesters of 2-years education of masters (with start in I semesters and finish in IV semester). And these 4 activities are being supplemented by the mentioned IP6305 (Research practice) code of III semester (time of indedendent work at scientific-or-research centers) .

1-st type as Internship practice - abroad travel to one of series contract Universities for 2 weeks, for example, can be noted separately.

Full info on mentioned codes NIRM 1, NIRM 2, NIRM 3, NIRM 4 please, see in end of this doc under title "Recearch" (blue color).

Module Objectives. Students will be able to:

1. get acquainted with a foreign university in the educational process;
2. understand the principles of implementation and application of informational and practical technologies in educational process of foreing university;
3. try or implement some informational or practical or teaching technology during Internship practice;
4. apply the received methodological knowledge from this internship for design and implementation of next own master dissertation;
5. apply modern computer technologies in collection, storage, processing, analysis and transfer of biological and teaching educational information;
6. use modern technology to solve research and and technical problems at teacher professional activity;
7. apply modern distance learning technologies in practice.

Module designation	***Internship practice***
Credit points	4
Semester(s) in which the module is taught	3
Relation to curriculum	M-5. Application of innovative technology in bioligy Major disciplines (MD) /University component
Teaching methods	Internship
Workload (incl. contact hours, self-study hours)	2 weeks, 4 hour per day in 4-5 days in week

Person responsible for the module	**Kustubayeva Almira Melsovna, PhD** Head of Department of Biophysics, Biomedicine and Neuroscience Master-students themselves and dissertation supervisors. Dissertation supervisors are staff of Department of Biophysics, Biomedicine and Neuroscience with PhD dergree
Language	English
Required and recommended prerequisites for joining the module	General biology, pedagogy, theoretical biology, teaching skills
Module objectives/intended learning outcomes	As a result of intership undergraduates should: *know* the principles of implementation and application of informational and practical technologies in educational process of any foreing university; *be able to* applicate the main idears in biological research and teacher education.
Content	To receive wider vision on teaching process including the use of modern digital technologies to support learning and create a new approaches and apply them in educational practice
Control forms	Report about Internship Financial report on expenditures

Elective Component (EC)

Modern educational technologies in biology

Module Objectives. Students will be able to:

1. develop the ability to apply and practically test the methodology of biology lesson using educational technologies to ensure the initiative and independence of students, the development of their creative abilities in teaching biology.
2. demonstrate modern educational technologies used in the process of teaching biology;
3. nalyze modern educational technologies in biology;
4. analyze the state of the existing educational system;
5. create and distribute effective assessment systems used in the educational process technologies;
6. apply modern educational technologies in a broad educational practice;
7. apply a variety of educational technologies in accordance with the objectives of the educational process;
8. apply the methodology of designing educational technologies;
9. carry out a scientific analysis of the capabilities and potential of modern educational technologies.

Module designation	***Modern educational technologies in biology***
Credit points	9
Semester(s) in which the module is taught	3
Relation to curriculum	M-6: Integration of disciplines in teaching of biology

	Theoretical educating/ Major disciplines (MD) /Selective component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 4 hours per week for Seminar, total 60 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Bassygarayev Zhandos, PhD** Senior Lecturer of Department of Biophysics, Biomedicine and Neuroscience
Language	Kazakh and Russian languages
Required and recommended prerequisites for joining the module	Biology, biochemistry, biophysics, physiology, ecology, informatics, botany, biotechnology
Module objectives/intended learning outcomes	The purpose of course is to familiarize students with training activities and intensive forms of education, with classical and innovative pedagogical technologies in biology, various forms of organization of the educational process, processes taking place in modern biological education at stage of its reform. As a result of studying the course, undergraduates should: *know* the classification of modern pedagogical technologies; information and communication technologies; methodology and technology of scientific and pedagogical research. *be able to:* apply modern computer technologies (IT) in educational training, knowledge control, in collection, storage, processing, analysis and transmission of experimental biological information for subsequent solutions to problems in the field of biology, independently mastering new information technologies. *own:* methods of collecting the necessary information, its correct design, demonstration and use it in educational activities. Independently uses modern computer technologies to solve research and production and technological problems of professional activity, to collect and analyze biological information. *Undergraduates acquire practical skills:* in the ability to see, pose and resolve complex interdisciplinary issues when conducting training lessons, research work, using practical methods, processing the results of studying issues as actually obtained and obtained from other scientific disciplinary courses.
Content	To train and form managerial competence with the application of technological methods in organization, management and preparation of the educational process
Examination forms	Standard, Test online
Reading list	1. Modern educational technologies: Textbook. allowance / ed. N.V.Bordovskaya. - 3rd ed., erased. - M.: Knorus, 2013. - 432 p. 2. Modern educational technologies [Electronic resource]: educational allowance / L.L. Rybtsova [i dr.]. —

	Electron. text data. - Yekaterinburg: Ural Federal University, 2014. - 92 p. — 978-5-7996-1140-8. — Access mode: http://www.iprbookshop.ru/68391.html 3. Uzunov F.V. Modern educational technologies [Electronic resource]: textbook / F.V. Uzunov, V.V. Uzunov, N.S. Uzunova. — Electron. text data. - Simferopol: University of Economics and Management, 2016. - 113 p. —2227-8397. - Access mode: http://www.iprbookshop.ru/54717.html 4. Dneprovskaya N.V. Open educational resources [Electronic resource] / N.V. Dneprovskaya, N.V. Komleva. — Electron. text data. - M.: Internet University of Information Technologies (INTUIT), 2016. - 139 p. - 2227-8397. - Access mode: http://www.iprbookshop.ru/39559.html 5. Kovardakova M. A. Interactive teaching technologies in higher education: a textbook for students of the faculty of advanced training / M. A. Kovardakova, O. A. Makarova, E. O. Uskova; UlGU, FPKP. - Ulyanovsk: UlGU, 2016. - 75 p. 6. Progressive information technologies in modern educational process [Electronic resource]: study guide / E.M. Andreeva [i dr.]. — Electron. text data. — Rostov-on-Don: Southern Federal university, 2011. - 256 p. — 978-5-9275-0804-4. - Access mode: 7. Internet resources: www.google.kz www.twig-bilim.kz www.planeta42.com www.anatomycarda.com

Methods of teaching biology for the renewal program

Module Objectives. Students will be able to:

1. create a holistic systematic understanding of new standards and curricula in teaching biology. To use pedagogical approaches in the teaching of biology in the updated program, to create and distribute effective systems of evaluations used in the updated program in biology. Will be studied the spiral training program.
2. analyze and know the content of new standards and curricula in biology in secondary and high school;
3. analyze and know the totality of subjects included in the State compulsory standard of secondary education and mandatory for study in general education organizations;
4. analyze the state of the existing educational system;
5. be able to use the principles of criterion assessment, the process of formative and summative assessment;
6. argue the importance of main key components: curriculum, teaching and assessment methods;
7. apply modern educational technologies in a broad educational practice;
8. use pedagogical approaches in teaching biology according to the updated program;
9. create and distribute effective rating systems used in the updated program.

Module designation	***Methods of teaching biology for the renewal program***
Credit points	9
Semester(s) in which the module is taught	3
Relation to curriculum	M-6: Organization and management of education process Theoretical educating/ Major disciplines (MD) /Selective component
Teaching methods	Lectures, Seminar classes, IWS
Workload (incl. contact hours, self-study hours)	15 weeks, 2 hour per week for Lecture, total 30 Contact hours. 4 hours per week for Seminar, total 60 Contact hours. Independent work of student - 98 hours
Person responsible for the module	**Tormanov Nurtay Tormanovich, PhD** Associate Professor Department of Biophysics, Biomedicine and Neuroscience
Language	Kazakh
Required and recommended prerequisites for joining the module	General biology, pedagogy, theoretical biology, methodology of teaching of biology
Module objectives/intended learning outcomes	As a result of studying the course, undergraduates should: know, be able to use and posses during learning the following aspects: spiral learning program; methods and ways of teaching in the study of biology in updated programm; active learning, the role of a biology teacher in active learning; language skills in biology teaching.
Content	To train and form managerial competence with the application of technological methods in organization, management and preparation of the educational process
Examination forms	Written examination: Test
Reading list	1. Tormanov N.T., Ablaikhanova N.T., Ursheeva B.I. The concept of biological education and innovative teaching methods. Textbook, Kazakh University, Almaty, 2016, 277 pages. 2. Tormanov N.T., Ablaikhanova N.T. Innovative Methods for Teaching Biology. Textbook, Kazakh University, Almaty, 2015, 258 pages. 3. Tormanov N., Usenova N.K. Tormanova A.N. Synergetic approach in the organization and management of the educational process. International scientific-practical conference "30 Years of Independence of Kazakhstan. Actual problems of biological and ecological education in secondary and higher school (innovation and experience)", December 20-21, 2021, Almaty, Kazakhstan. - P.206-208. 4. Tormanov N.T., Ablaikhanova N.T. Innovative methods of teaching biology"- Алматы: «Қазақ университеті» 2013. Taraz, 131-150 pages. 5. Tormanov N.T., Ursheeva B.I. Instructions for the methodological complex of teaching biology. Almaty, - 2014, 58-76 p.

	6. Iskakova P., Ernazarova Z. Methods of using new technology. - Kyzylorda, 2014, 2 p. 7. Khishchansky N.V. About system-synergistic approach in solving of developmental education, St. Petersburg, - 2015 13-15 p. 8. Sadvakasova ZM Pedagogical management. Teaching Aid. 2nd supplemented edition. - Almaty. 2012 - 187 p. 9. Andreeva N.D. Methods of teaching biology in modern school. – Ed. 2nd, rev. and additional - M . Yurayt, - 2016. - 295 p. 10. O. I. Mozhaeva, A. S. Shilibekova, D. B. Ziedenova. Criterion assessment guide for primary and general secondary school teachers: Educational and methodological Tool.– Astana "Nazarbayev Intellectual Schools", 2016. - 54 p. 11. Internet resources: http://elibrary.kaznu.kz/ru https://online.zakon.kz/Document/?doc_id=3654634 https://www.kaznu.kz/kz/20521/page/ https://nis.edu.kz/kz/ http://qazan.info/wp-content/uploads/2019/11/ https://nao.kz/blogs/view/2/1085?lang=kz http://www.orleualmobl.kz/attachments/article/73/Sbornik_Konf_16.01.2018_jaratylystanu_2_cektsiya.pdf https://nis.edu.kz/kz/programs/

REASEARCH

work of master-students under master thesis or dissertation.

Objectives. Students will be able to:

1. use pedagogical approaches in teaching biology during research practice
2. plan research practice acording to topic of own master dissertation
3. use laboratory tools during research practice including internship
4. create the scientific materials for seminars
5. analyze and know the content of new scientific articles in topic of own master dissertation
6. be able to use the principles of assessment and statistical evaluation of results of research practice
7. write the article for publications in avalable journals and International Conferences;
8. argue the importance of main key components of own master dissertation;
9. write the master dissertation and apply modern educational technologies at writing of dissertation at nesseseries
10. do public defence the master dissertation.

Module designation	**REASEARCH WORK**
Credit points	24
Semester(s) in which the module is taught	1,2,3,4

Relation to curriculum	University Component 2.Master's Student Research 2.1. Individual Master's Student Research (MSR), Including Scientifing Internship and Dissertation Writing
Teaching methods	scientific and teaching work, publications, conferences and more
Workload (incl. contact hours, self-study hours)	60 weeks, scientific work, teaching work publications, conferences and more NIRM 1 Recearch seminar NIRM 2 Dissertation writing NIRM 3 Scientific Internship (2-nd type of scientific internship, mainly with employers: local research bases or institutes or public schools - for writing a master's thesis) NIRM 4 Publication in the Proceedings of International Conferences
Person responsible for the module	**Kustubayeva Almira Melsovna, PhD** Head of Department of Biophysics, Biomedicine and Neuroscience Master-students themselves and dissertation supervisors. Dissertation supervisors are staff of Department of Biophysics, Biomedicine and Neuroscience with PhD dergree
Language	Russian, Kazak, English
Required and recommended prerequisites for joining the module	General biology, biochemistry, biophisics, biothecnology and microbiology, genetics, physiology, histology, pedagogy, pedagogy of higher education, phsycology, methodology of biology teaching
Module objectives/intended learning outcomes	scientific and teaching work, publications, conferences, master dissertation
Content	To form the ability to apply the modern methods and methodologies of teaching and support a own scientific research when performing a Masters' dissertation. Within the framework of Education program teaching the methods and methodologies in biology are studied and mastered; modern stages and principles of planning a lessons, experiments; features of use of biological objects at teachig biology, selection of modern technical, digital, mathematical, physical and biological research methods during teaching prosess, specifics of a computer education; rules for the implementation of lessons, laboratory class experiment, processing and interpretation of results - for next satisfied professional activity after graduated.
Examination forms	Writing of articles, publications, master thesis. Practical/laboratory exercises, IWS should be independent and creative. Plagiarism, forgery, the use of cheat sheets, cheating at all stages of control are unacceptable.
Reading list	1. List of litarature included in educations courses of above mentioned disciplines from modues CD, MD, University component, Elective component - literature is included to sillabuses.

	2. Materials of lecturers of courses of above mentioned disciplines from modues CD, MD, University component, Elective component – materials included to electronic system of al-Farabi Kazak University - section Educational and Methodological Complex of Disciplines EMCD https://univer.kaznu.kz/teacher/umkdpack 3. Ablaikhanova N.T., Duissebbek A., Balmaganbet Z. Analyzers for grade 9. Electronic Textbook, Almaty, 2022, 180 pages 4. Ablaikhanova N.T., Ussipbek B., Shvesova Y.V. and erg. Biology textbook for grade 11. Textbook, "Mektep" - 2020, in 4 languages (Kazakh, Russian., Uighur, Uzbek), 200 pages 5. Tormanov N.T., Ablaikhanova N.T., Ursheeva B.I. The concept of biological education and innovative teaching methods. Textbook, Kazakh University, Almaty, 2016, 277 pages.

Module designation	**MASTER THESIS WRITING AND DEFENCE**
Credit points	12
Semester(s) in which the module is taught	4
Relation to curriculum	University Component 2.Master's Student Research 2.1. Individual Master's Student Research (MSR), Including Scientifing Internship and Dissertation Writing
Teaching methods	Analysis, writing of master thesis, public oral skills
Workload (incl. contact hours, self-study hours)	Writing 20 weeks Defence - 1 weeks
Person responsible for the module	**Kustubayeva Almira Melsovna, PhD** Head of Department of Biophysics, Biomedicine and Neuroscience Master-students themselves and dissertation supervisors. Dissertation supervisors are staff of Department of Biophysics, Biomedicine and Neuroscience with PhD dergree
Language	Russian, Kazak, English
Required and recommended prerequisites for joining the module	General biology, biochemistry, biophisics, biothecnology and microbiology, genetics, physiology, histology, pedagogy, pedagogy of higher education, phsycology, methodology of biology teaching
Content	The final Attestation (FA) of master students is carried out in the form of writing and defending a master's thesis. To conduct FA of students, the Attestation Commission is created. Students who have fully completed the educational process in accordance with the requirements of working and individual curriculum and working curricula, and who have received admission to the defense by the supervisor, are allowed to the FA. Programmes for exam in educational programmes of higher education are developed by graduating Department of Biophisics, Biomedicine and Neuroscience and approved by

	Academic Council of Faculty Biology and Biothechnology and Academic Council of University. The defense of master's thesis is held at an open meeting of Attestation Commission On the topic of the master's thesis, students must publish at least one scientific publication. Before defending Master's thesis, they undergo a mandatory check for plagiarism in UNIVER system. The results of comprehensive examinations and defense of dissertation work are announced on the day they are held. Decisions on defense assessments, as well as on awarding qualifications, awarding a degree and issuing a state diploma (without distinction, with honors) are made by Attestation Commission at a closed meeting by open voting by a simple majority of votes of the commission members participating in the meeting. A student who has passed the final attestation and confirmed the mastery of the educational programmes is awarded a master's degree by decision of Attestation Commission and is awarded a qualification in the relevant educational programmes and is issued a diploma with an application free of charge. The diploma appendix (transcript) indicates the latest grades according to the point-rating letter system of assessments for all academic disciplines, completed term papers (projects), research or experimental research work, types of professional practices, final certification, indicating their volume in academic credits and hours. Graduates of master's degree programs receive a European Diploma Supplement free of charge in addition to their diploma.
Examination forms	Final Attestation - Public defence
Reading list	1. List of litarature included in educations courses of above mentioned disciplines from modues CD, MD, University component, Elective component - literature is included to sillabuses. 2. Materials of lecturers of courses of above mentioned disciplines from modues CD, MD, University component, Elective component – materials included to electronic system of al-Farabi Kazak University - section Educational and Methodological Complex of Disciplines EMCD https://univer.kaznu.kz/teacher/umkdpack 3. Ablaikhanova N.T., Duissebbek A., Balmaganbet Z. Analyzers for grade 9. Electronic Textbook, Almaty, 2022, 180 pages 4. Ablaikhanova N.T., Ussipbek B., Shvesova Y.V. and erg. Biology textbook for grade 11. Textbook, "Mektep" - 2020, in 4 languages (Kazakh, Russian., Uighur, Uzbek), 200 pages 5. Tormanov N.T., Ablaikhanova N.T., Ursheeva B.I. The concept of biological education and innovative teaching methods. Textbook, Kazakh University, Almaty, 2016, 277 pages.
Publications of masters students	Examples of masters' thesis on the end of 2023:

	- Ryskulbek A. "Studying the effectiveness of using innovative teaching methods in biology lessons". - Nurdauletkyzy U. “"Studying Increasing Interest in Biology by Conducting Research with Students in High School". - Rakhimov E. "Study of independent work of students in biology lessons".